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Original Articles

The Treatment of Syphilis with Bismuth*

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The clinical use of bismuth in the treatment of syphilis is the result of the researches of Sazerac and Levaditi of the Pasteur Institute. In 1921[1] and 1922[2] these investigators reported results of their experiments on syphilitic rabbits in which it was shown that various salts of bismuth injected intramuscularly (intravenous injections of bismuth salts were very toxic) possess spirocheticidal action. As a result of these experiments they observed that the least toxic and most effective bismuth preparation was sodium and potassium tartro-bismuthate. They suggested the use of this preparation in the treatment of human syphilis, and were the first to employ it in an oil suspension by intramuscular injection.

The spirocheticidal action of various bismuth salts can be attributed directly to the metal bismuth. Sazerac and Levaditi have shown that the metal bismuth, employed as precipitated bismuth in isotonic solution, exerts spirocheticidal action. Others demonstrated a similar action of bismuth trioxide, injected intramuscularly in an oil suspension.

As a result of Sazerac and Levaditi's observations, French pharmaceutical houses have purveyed sodium and potassium tartro-bismuthate under the commercial name of Luatol, which is dispensed in an aqueous solution and in oil suspension, and Trepol, another commercial name for the same drug in an oil suspension.

The employment of sodium and potassium tartro-bismuthate in the treatment of human syphilis was first made by Fournier and Guenot.[3] These clinicians reported favorable results obtained with the drug in the treatment of 200 syphilitics in different stages of the disease.

Since the aforementioned papers have been published, an increasing number of reports have appeared in the literature, mostly by French writers, in which a large number of syphilitic patients, in the various stages of the disease and with divers manifestations, have been treated with bismuth. These reports show that bismuth is therapeutically active when employed in the treatment of human syphilis.

In addition to the use of sodium and potassium tartro-bismuthate in the treatment of syphilis, other bismuth preparations have been reported as effective antisyphilitic agents. Reference is made to the following communications: Lacapere and Galliot[4] on the intravenous injections of colloidal suspension of bismuth; Grenet, Drouin and Richon[5] on the intravenous injections of an aromatic bismuth compound

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—a sodium derivative of trioxybismuth—benzoic acid; Horta and Granns[6] on the intramuscular injection of iodobismuthate of quinine and also bismuth citrate; Fournier and Guenot[7] on the use of the metal bismuth (neo-trepol, precipitated bismuth in isotonic solution) administered intramuscularly.

This report is based upon the clinical results obtained in the treatment of seventy-five syphilitic patients, who were in the three stages of the disease, the majority of whom presented cutaneous manifestations. The bismuth preparations employed were sodium and potassium tartro-bismuthate in aqueous solution—luatol, and the same drug in olive oil suspension, trepol. Bismuth trioxide was also employed. The drug was suspended in olive oil and administered intramuscularly and also in the form of inunctions.

The Clinical Use of Bismuth in the Treatment of Syphilis.—Sodium and potassium tartro-bismuthate is employed solely by intramuscular injection. Intravenous administration is positively contraindicated since the drug is very toxic when administered in this manner in animals. Intramuscular injections are given in the same manner as is mercury. Care must be exercised that the needle is not inserted in a vein.

An aqueous solution of sodium and potassium tartro-bismuthate-luatol is injected in doses of 0.1 gm. every other day. Doses of 0.2 gm. may be given every fourth day, but this amount may be followed by a severe local reaction. The oil suspension of the drug (trepol) is usually injected in doses of 0.2 gm. every fourth day. Bismuth trioxide was employed in doses of 0.2 gm. in 2 cc of olive oil administered intramuscularly every fourth day.

A conservative and effective plan of treatment is to administer the bismuth preparations in the aforementioned dosage and interval between treatments until a total of 2.5 gm. of the drug has been administered. A rest period of three to four weeks is then given, followed by a repetition of this treatment until the Wassermann test is maintained negative. In my experience this plan of treatment is well tolerated. If larger amounts of the drug are injected at more frequent intervals until as much as 3.0 gm. is administered in the course of one month, many of the patients so treated develop untoward reactions of bismuth, notably stomatitis. However, some writers advise the total administration of as much as 3.0 gm. of bismuth in about one month. For example, Fournier and Guenot advise the use of an oil suspension of sodium and potassium tartro-bismuthate given in the following manner: one course of treatment consisting of ten to twelve injections in doses of 0.2 to 0.3 gm. to be given in about one month. If such intensive bismuth therapy be employed it is necessary to particularly watch for untoward reactions of bismuth, especially stomatitis, and to interdict treatment or to administer less intensive treatment if untoward reactions develop.

Untoward Reactions of Bismuth.—The first untoward reaction noted after intramuscular injections of bismuth is a gingival blue line, which represents a deposit of bismuth sulphide. It usually appears first on the gingival border of the canine teeth, anteriorly or posteriorly. It may remain localized at this site, or may involve the gingival border of all the teeth. It is indistinguishable from the blue line of plumbism.

A foul odor to the breath is usually but not always associated with the gingival blue line. If the blue line is well marked the breath is invariably foul. Exceptionally, it may be detected before the appearance of the gingival blue line. On the other hand the foul breath may not appear for some time after the blue line. These symptoms eventually appear after consecutive administration of a varying amount of bismuth. They may be noted after a total administration of 1.0 to 1.5 gm. of bismuth. This, however, is exceptional. The majority of patients present these symptoms in a moderate degree, after a course of treatment consist-

ing of 2.5 to 3.0 gm. of bismuth administered in the course of from six to eight weeks. Bluish spots on the gums, tongue and buccal mucous membrane may appear with the gingival blue line. They likewise represent a deposit of bismuth sulphide.

The gingival blue line and foul breath persists if bismuth is continued, and disappears about one month after the cessation of treatment.

Depending upon the intensity of bismuth administration, these reactions forecast the appearance of stomatitis and are associated with it.

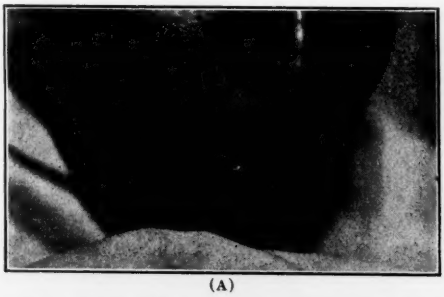
Stomatitis.—The local lesions of bismuth stomatitis vary from a catarrhal gingivitis to ulcerations, which appear around the teeth and are usually covered by a false membrane; in the more advanced stage there is a generalized ulcerative stomatitis which may be accompanied by ulcers involving the tongue and buccal mucosa.

A lesser degree or absence of salivation, the presence of a diphtheroid membrane, of a gingival blue line and bluish spots are features which differentiate bismuth stomatitis from the well-known picture of mercurial stomatitis.

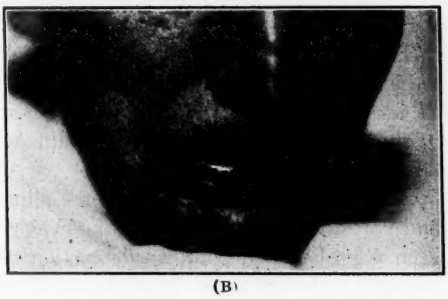
The benign form of bismuth stomatitis soon disappears after bismuth treatment is discontinued, and is of little consequence. The severe forms with extensive ulceration are of greater import. Most of the cases of stomatitis reported have been of the benign form. The incidence of stomatitis is intimately associated with the intensity of bismuth treatment and the hygienic condition of the mouth of the patient treated. Stomatitis has been observed to follow a single intramuscular injection of 0.5 gm. of bismuth. Its development can be avoided, as well as a state of bismuth intoxication, by temporarily interrupting treatment, or in lieu of this to decrease the dose or increase the interval between treatments after the appearance of a well-pronounced gingival blue line and foul breath. In this regard, I believe more significance attaches to the presence of the foul breath than the blue line.

In all the patients in this series, acute manifestations of syphilis disappeared before it became necessary to interrupt or to curtail bismuth administration on account of untoward reactions.

Chills and fever occasionally occur soon after an injection of bismuth. Loss of weight, anorexia and malaise may appear after prolonged treatment with bismuth. The following reactions have been reported by others, but not observed in our series:



(A)



(B)

FIG. 1.—Chancre of lip (A) before treatment with an oil suspension of sodium and potassium tartro-bismuthate. Duration three weeks. No previous treatment. Dark-field examination positive. Wassermann reaction 4 plus. Received one injection of the drug (0.1 gm.), after which time the patient did not report for further treatment, on account of illness, until two weeks later. At this time the chancre was almost healed (see B). The patient did not receive other treatment during this interval. Chancre entirely healed after a total administration of 0.3 gm. Wassermann test negative after total administration of 1.35 gm., which was administered intramuscularly in doses of 0.1 gm. and 0.2 gm. at intervals of three and four days. Consecutive injections given until a total of 2.5 gm. of the drug was administered.

Polyuria, which disappears soon after the cessation of treatment and which is said to occur at times after the oral administration of bismuth. Enteritis and cutaneous reactions rarely occur.

Bismuth as employed in the treatment of syphilis is apparently not very irritating to the kidneys. However, severe nephritis has been reported following its administration. Only a few of the patients in this series developed albuminuria after bismuth therapy. In the present state of our knowledge it is desirable to conduct frequent examinations of the urine of patients receiving bismuth treatment.

After the administration of bismuth a black deposit may form in the urine after standing, or it may be black at the time it is voided. This is due to bismuth sulphide, which is formed by bacterial action in the urine on the bismuth excreted therein.

A few patients in this series complained of slight stiffness of a number of joints, particularly the knees, ankles, and fingers. This developed during the administration of a course of bismuth therapy. After a temporary cessation of treatment this symptom disappeared.

Two patients developed paresthesia involving the legs and hands. This developed after a total administration of about 2 gm. of sodium and potassium tartro-bismuthate. Treatment was suspended.

Symptoms of slight stiffness of the joints and paresthesia have not to my knowledge been recorded as an untoward reaction of bismuth. Whether the metal bismuth or possibly a contaminate, for example arsenic or lead, in the preparation employed, produced symptoms of a peripheral neuritis in the aforementioned patients must be reserved for future investigation. Its occurrence as well as the possibility of the occurrence of other untoward reactions of a more serious nature suggests conservatism in the bismuth therapy of syphilis, more certainly regarding intensive treatment with bismuth.

It is known that relatively enormous doses of bismuth can be taken by mouth without producing signs of intoxication. This is probably due to the fact that very little is absorbed by the digestive tract. Although at times following oral administration of large amounts of bismuth signs of intoxication may occur, these signs also occur following absorption from wounds and when injected in the form of Beck's paste. Absorption is more rapid following the therapeutic use of bismuth by intramuscular injection. It is logical to believe that following this treatment any of the symptoms of bismuth poisoning, with which we are familiar, may appear. There is doubtless much to learn regarding the untoward reactions from the prolonged administration of bismuth by intramuscular injections. The bismuth therapy of syphilis is too recent to have given us full information in this regard. It is a matter of considerable importance that one practicing bismuth therapy of syphilis should be cognizant of the symptoms of bismuth poisoning and to watch for the appearance of these symptoms. In this study the administration of an arbitrary amount of bismuth in a specified time was not always possible. A formulated plan of bismuth treatment as with arsphenamine cannot always be carried out; there is too much individual variation of intolerance to these drugs.

In the treatment of syphilis with bismuth, as in the treatment of any infectious disease, the fundamental principle in therapeutics, namely, the importance of treating the patient as well as the disease, should not be neglected.

Clinical Results in the Treatment of Syphilis with Bismuth.—The clinical results obtained with the bismuth preparations employed in this study were similar to the favorable results reported by others.

These results may be summarized as follows: Spirochetes disappear from the open lesions of primary and secondary syphilis twenty-four hours after the administration of 0.2 gm. of the drug. Lesions of primary, secondary and tertiary syphilis involving the skin and mucous membranes involute after a total administration of bismuth ranging in amounts from 0.3 gm. to 1.5 gm. (See Figs. 1, 2, 3.) Patients with visceral syphilis and neurosyphilis were not included in this study. However, others have re-

ported favorably on the bismuth therapy of such cases.

Effect on the Wassermann Test.—The four-plus Wassermann reaction of the majority of patients in early secondary syphilis, previously untreated, and in the late secondary stage, becomes negative following the total administration of the bismuth preparations, in amounts ranging from 1.5 gm. to 3.0 gm. (See Fig. 2.) In some cases as much as a total administration of 4.0 gm. is required. The four-plus reaction of primary syphilis becomes negative after a less amount of the drug and is somewhat proportional to the duration of the chancre. (See Fig. 1.) The four-plus Wassermann reaction of tertiary syphilis requires varying amounts of bismuth treatment and cannot arbitrarily be stated.

Two patients in this series, who were in the secondary period of syphilis, absented themselves from further treatment after receiving the first course, which consisted of a total administration of 2.5 gm. of bismuth. The initial negative Wassermann reaction was obtained after receiving about 1.5 gm. Two months later they returned; the Wassermann test at this time was 4 plus. After further treatment it again became negative. The initial negative Wassermann reaction after bismuth therapy, indeed after arsphenamine therapy, is

(A) (B)

FIG. 2.—Woman aged 24. Diffuse small miliary papular syphilide (follicular syphilide). (A). The grouping characteristic of this eruption is well shown in the photograph. Duration one month. No demonstrable chancre. No previous treatment. Wassermann reaction 4 plus. Intramuscular injections of 0.1 gm. (1 cc) of an aqueous solution of sodium and potassium tartro-bismuthate administered every other day. After the third injection a marked change in the eruption was apparent. After the sixteenth injection (total 1.6 gm.) eruption entirely gone, pigmentary areas only remaining (see B). Wassermann reaction made after the twentieth injection (2.0 gm. total) was negative. Twenty-six consecutive injections administered over a period of ten weeks. At this time there was a slight gingival blue line present; the breath was not foul. The patient had no subjective complaint and the urine was negative. The dark areas in the lower part of each photograph represent a stain from tincture of iodine which was employed to sterilize the skin at the site of a bismuth injection.

very rarely, if ever, a permanent one. It is therefore imperative to continue treatment beyond the time the Wassermann test first becomes negative. How long and what amount of bismuth is required to permanently maintain the Wassermann test negative cannot at the present time be answered. It will require years of observation to properly define the true value of bismuth as an antisyphilitic agent.

The majority of patients in the acute secondary period of syphilis previously untreated require 10 to 15 intravenous injections of 0.9 gm. neoarsphenamine to obtain a negative Wassermann reaction. This treatment should be administered in two courses with an interval of one month intervening. A total number of 30 injections, administered in four courses, should constitute an *irreducible minimum* of treatment with arsphenamine.

About 3 gm. (total administration) of bismuth will be required in the majority of patients in the acute secondary period of syphilis to obtain a negative Wassermann reaction. One can therefore compare the therapeutic efficiency, so far as the Wassermann test is concerned, of 3 gm. of bismuth to 10 to 15 injections of 0.9 gm. neoarsphenamine. From this basis of comparison an irreducible minimum of treatment with bismuth would constitute a total administration of 6 gm. of bismuth.

Pain After Intramuscular Injections of Bismuth.—Injections of an aqueous solution of sodium and potassium tartro-bismuthate were more painful than the oil suspension of the same drug. Injections of 2 cc (0.2 gm.) of the aqueous solution were so painful that its employment in this dosage is not practicable.

The pain resulting from the injection of 2 cc (0.2 gm., the usual dosage) of the oil suspension was variable. Some patients complained of no pain whatever. Others complained of a degree of pain of variable duration. In some patients it was necessary to inject one and a half cc (0.15 gm.), since the injection of 2 cc was too painful. On the whole the pain following bismuth injections is perhaps no more than that following mercurial injections.

Treatment with Bismuth Trioxide.—As mentioned in the foregoing, bismuth trioxide was employed in doses of 0.2 gm. suspended in 2 cc of olive oil injected intramuscularly every fourth day. The injection of this preparation was usually not painful. Doubtless owing to the delayed absorption there was less immediate therapeutic effect than observed with sodium and potassium tartro-bismuthate. However, as far as could be determined in this limited study, approximately the same total amount of bismuth trioxide was required to involute cutaneous syphilitic lesions and to cause a positive Wassermann reaction to become negative as was required with the other bismuth preparation. However, further study will be necessary to definitely determine the comparative therapeutic value of bismuth trioxide and sodium and potassium tartro-bismuthate.

The following bismuth preparations were employed in the form of inunctions: finely pulverized bismuth trioxide, colloidal bismuth (Bismon), and the metal bismuth. These preparations were used in doses ranging from 1.0 to 4.0 gm. as a daily inunction in equal parts of lanolin and petrolatum. In one patient as many as twenty consecutive inunctions of 4.0 gm. each of bismuth were employed. As a result of this treatment there was a considerable improvement of the secondary eruption of syphilis, but not a complete involution. This treatment did not produce a gingival blue line or foul breath. Apparently very little of the bismuth was absorbed. The spirocheticidal action of bismuth administered in this manner was less than that of mercurial inunctions and considerably less than that of intramuscular injections of bismuth (see Fig. 3).

Distribution of Bismuth: Its Delayed Action. — Experimental studies on animals show that when the salts of bismuth are injected intramuscularly, bismuth is found in the liver, kidney, spleen, brain, and sali-

vary glands. It is eliminated in the urine, saliva, bile, feces, and sweat. Radiographic examinations at the site of injection of bismuth show that it remains in the tissues for a long time after injection.

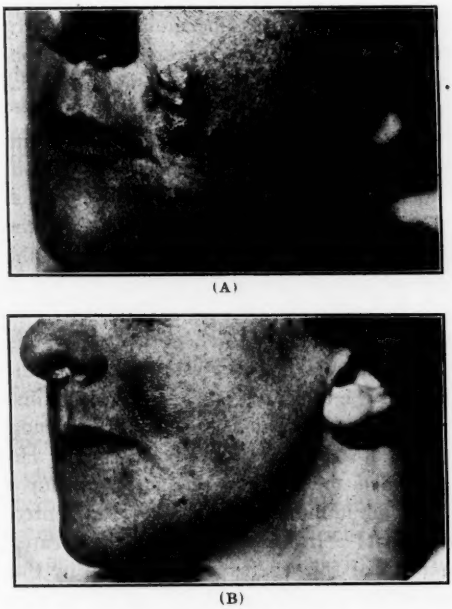
According to the studies of Aubry and Demelin, bismuth, as employed in the treatment of human syphilis, appears in the urine of the patient treated eighteen to twenty hours after the drug is administered, and can be detected twenty-five days after the last injection of a total administration of 2.0 gm. of the drug.

The delayed elimination of bismuth is apparent clinically, since the antisyphilitic effect of bismuth continues for some time after the administration of the drug. Active lesions continue to involute for a time after an injection of bismuth (see Fig. 2), and a positive Wassermann reaction was observed in this study to become negative during a rest period in treatment.

The delayed elimination and delayed action of bismuth should be borne in mind in the bismuth therapy of syphilis. Indeed, the delayed action of bismuth is doubtless a therapeutic advantage, since therapeusis is probably maintained over a long period. This, of course, applies to the intramuscular injections of mercury and arsphenamine (sulpharsphenamine). Since we now know that it is not possible to render spirochete-free a syphilitic patient with a few intravenous injections of arsphenamine, it would appear that prolonged continuous treatment by intramuscular injections, so that therapeusis is constantly maintained, has more in its favor as a rational form of treatment than the usually employed intravenous medication in which the medicament is more rapidly eliminated.

Comparison of Bismuth with Arsphenamine and with Mercury: Its Place in the Treatment of Syphilis.—The results of the studies herein reported have left no doubt as to the spirocheticidal action of bismuth. This action is greater than that of mercury, but less than that of arsphenamine, although a clinical comparison of the spirocheticidal action of arsphenamine with that of bismuth cannot accurately be made, since arsphenamine is administered intravenously in a much larger amount than is bismuth, which is administered intramuscularly.

Bismuth can be placed about midway between mercury and arsphenamine in so far as concerns its spirocheticidal action. In this regard Milian compares the therapeutic activity of arsphenamine, bismuth and mercury in this way: the therapeutic



(A)

(B)

FIG. 3.—Woman aged 34. Married three years. Never pregnant. No knowledge of infection. No previous treatment. Gumma of left cheek (A); duration three months. Wassermann reaction 4 plus. Treated with 21 consecutive daily inunctions of bismuth trioxide in equal parts of lanolin and petrolatum. The amount of bismuth trioxide in each inunction varied from 0.5 gm. to 2.0 gm. Total amount of bismuth trioxide used in the inunctions was 22 gm. As a result of this treatment there was about a 75-per-cent involution of the lesion. Intramuscular injections of an oil suspension of sodium and potassium tartro-bismuthate were then employed. The drug was injected in doses of 0.1 gm. and 0.2 gm. every fourth day. After a total administration of 0.5 gm. the partly healed lesion entirely disappeared (see B). One course of treatment consisted of a total administration of 2.5 gm. of the drug injected in the course of forty-three days. At this time the Wassermann reaction was still 4 plus. A slight gingival blue line was present, but the breath was not foul. The patient had no subjective complaint and the urine was negative.

activity of arsphenamine is represented by the figure 10, bismuth by the figure 7, and mercury by the figure 4.

The advantage of having another active antisyphilitic drug in the treatment of human syphilis is obvious. Bismuth therapy will doubtless be of particular value in the treatment of syphilitic patients who are hypersensitive to arsphenamine, so that the rise of the latter drug is restricted, or contraindicated. This group of syphilitic patients is by no means small.

Another possible advantage of bismuth in the treatment of syphilis which is of considerable importance, although based upon theoretical considerations, concerns the occurrence of neurorecidive following the use of arsphenamine. The baneful action of irregular or lapsing treatment with arsphenamine in the early period of syphilis is well known. Such treatment greatly increases the incidence of early neurosyphilis. Ehrlich's explanation of this phenomenon is perhaps the one generally accepted. He explained the occurrence of neurorecidive upon an immunologic basis. He pointed out that: "In these patients the greater number of spirochetes are destroyed by the powerful spirocheticidal action of salvarsan. So rapidly is this accomplished that the usual tissue immunity which develops as a result of contact between parasite and host is lacking; as a result a small focus of spirochetes in the tissue of the central nervous system which may escape the action of salvarsan develops in the susceptible host with great rapidity and severity." In other words, a few injections of arsphenamine in the early period of syphilis, and the cessation of all other treatment, inhibit the consummation of immunological responses of the host to the parasite and doubtless produce a condition analogous to that existing in the primary incubation period in which there are spirochetes and no immunologic reaction. The incidence of early neurosyphilis is much greater following irregular and lapsing treatment with arsphenamine in the early period of syphilis than the incidence following mercurial treatment, or, indeed, no treatment at all.

Bismuth, on the other hand, by reason of its less energetic spirocheticidal action than arsphenamine, and perhaps by virtue of intramuscular administration, does not in all probability inhibit immunologic reaction of the host to such an extent as it is thought arsphenamine does. One would, therefore, expect a lessened incidence of early neurosyphilis following irregular and lapsing treatment with bismuth.

It is not practicable to treat routinely and exclusively such a chronic disease as syphilis with a drug administered solely by intramuscular injections. Perhaps clinical experience will give bismuth a valuable rôle in the treatment of syphilis by substituting a course of bismuth injections for the now employed mercurial injections as an alternative with a course of intravenous injections of arsphenamine.

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Impaired Hearing[1]

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It is my purpose to present this paper on impaired hearing in such a way as will make it of use to the general practitioner or any one interested, but not necessarily making a special study of otology. I say this because I have nothing very new to offer, nor have I any startling discovery to present to you. If I can succeed in placing the ordinary facts in a manner that will convince you that there are quite a few things about the subject that are looked upon by the general practitioner as belonging solely to the field of the specialist, which could be handled just as easily by the average physician, and also to call your attention to the fact that there are times when even the specialist is limited, and that therefore you should not be discouraged but rather continue to show interest in them, I will be satisfied.

Now, in order to understand the impairment of the hearing function, it will be necessary to recall to your memories the factors upon which normal hearing is based. The anatomic structures involved are, first, the auricle, which has for its function the collection of the sound waves and their transmission through the external canal to the drum membrane. Then the elastic drum membrane is set in motion, which in turn transmits its vibrations through the chain of ossicles in the middle ear to the perilymph in the vestibule. The endolymph is thus stimulated, acting on the nerve endings of the auditory nerve, through which the sensation of sound is carried to the brain.

In the middle ear there are some conditions absolutely necessary to normal hearing, and they are: (1) Normally moving ossicles; they must be free from ankyloses or inflammatory bands of adhesion which could interfere with their normal motility. The stapes which fits into the oval window of the vestibule must be movable. (2) The Eustachian tube, which has for its function to neutralize the air pressure within the middle ear, must be patulous, that is, no obstruction of any kind should be in it, whether that be a foreign body, a plug of mucus, inflammatory edema, or any other kind of obstruction, even if that be around the mouth of the Eustachian tube like adenoids or other growths. (3) The internal ear must be free from inflammation or other disease. Beyond the nerve there are pathways to the brain which may be diseased by tumors, pressure, etc., but these conditions are comparatively rare and we need not consider them here.

While normal hearing is all done through the above mechanism, a certain amount of sound is transmitted to the nerve endings of the internal ear through the bones of the skull. This is important to bear in mind because it gives us a direct access to the nerve if we wish to test its efficiency. There is no mechanism to be spoiled, and any sound heard through the bone can be attributed to the efficiency of the nerve.

We are now ready to consider the subject of impaired hearing. At the risk of deviating from the text-book style, I will take up the subject in a rather informal way, but I think in a way that will lend itself more readily to practical application.

We will begin with the assumption that a patient comes to the office complaining of impaired hearing. What thoughts should run through our minds as to where the trouble lies and what can be done for him if anything can be done at all? Three thoughts should present themselves in rapid succession: (1) Is it a simple blocking of the external auditory canal? (2) Or is it caused by disease of the middle ear or its outlets like the mastoid process or Eustachian tube? (3) Or is there involvement of the inner ear or the nerve and beyond?

The first should be eliminated at once, or else you may go through a series of tests,

[1] Read before the Medical League, Philadelphia, Jan. 29, 1923.

spend much time, suspect much trouble, and at the end of it all find nothing but a plug of wax blocking the external canal.

What are the conditions which we may meet in the external ear that may impair the hearing? The most common trouble will be found to be a plug of wax. The history here will be a sudden onset of deafness in one or both ears, with some tinnitus. It will frequently be complained of after bathing, because while the plug has been forming there was still a slight opening and no symptoms were present. As soon as some water entered the ear the plug was saturated, swelled, and a complete block resulted. Otherwise the plug would have continued to enlarge until at some later date the obstruction would be complete and the symptoms would then appear. The treatment is simple. Irrigate the ear with water or a solution of sodium bicarbonate or solution of peroxide, which helps to loosen the plug, and then wash it away. If you cannot succeed in this way try a small hook and curette and slowly remove it, being careful not to injure the canal wall or ear drum.

Other conditions in the external canal causing impairment of hearing are furunculosis, exostoses, eczema, or any condition which can block the canal. In furunculosis the pain will be more prominent and the patient will pay no attention to deafness. Exostoses, which are outgrowths of the bony canal, when they attain sufficient size cause impairment of hearing and have to be removed by operative means. Eczema associated with swelling and accumulation of crusts will cause as much discomfort from deafness as from the severe itching. Foreign bodies should not be overlooked. All of these conditions require local treatment which any one could apply if he wanted to. I might here remark that many physicians are timid when it comes to looking into the ear. They do not seem to see what they are looking at and are afraid of doing damage. However, with a little practice one can learn to direct the light from the head-mirror, and no damage can be done with an ear speculum if one is reasonably careful. It should not take long to distinguish the normal from the abnormal.

To continue with our subject, if we are satisfied that there is nothing in the external ear to explain the deafness, we are then obliged to decide whether it is caused by conditions in the middle ear or the internal ear, which means the nerve. For convenience, deafness has been classified into two forms: conductive, or that due to faulty conduction of sound, like trouble in the external or middle ear; and perceptive, or that due to faulty perception of sound in the nerve.

After we have eliminated the external ear by inspection we are confronted with the more difficult task of differentiating between the other two. This is done by certain tests at our command. The diagnosis is most important, as upon it rests the choice of treatment.

The first thing we want to do is to decide whether impairment really exists, and to what extent. The simplest thing to do is to see if the patient hears in an ordinary way. Place him at a certain distance, have him block one ear, turn his face away so that he cannot read your lips, and then talk to him. He should hear an ordinary conversational voice at a distance of forty feet. If he does not hear, come closer to him until he does hear your voice, and ask him to repeat your words to make sure that he hears you. If he only hears your voice at a distance of five feet you know that his hearing is only 5/40 of normal in the ear tested. Keep a record of this and other tests in order to note any changes after subsequent treatment. Then you continue to test in the same way with the whispered voice, calling off numbers, names, or other words. Normally a person should hear a whisper at about 20 feet; if he hears only at two feet, then his hearing is recorded as 2/20 of normal hearing in the ear tested. The same may be done with a watch; if your normal ear can hear a watch at forty inches and the patient hears it only at five inches, then his hearing is 5/40 normal. Here I have described the ordinary tests

employed by otologists, and they are technically known as the spoken voice, whispered voice, and watch tests.

These tests tell you how much or how little the patient can hear. We are further interested, however, to locate the seat of the trouble; for this purpose we employ a tuning-fork. There are various forks with various uses, but for the present we will take up the most useful, which is C256 or A200. The use of the others we will mention later. Before describing the use of the forks, I wish to repeat my previous statement that the internal ear perceives sound through the cranial bones, and any impairment of perception through the bones means impaired nerve or nerve endings in the internal ear.

We will now try a little experiment. Plug one ear with the finger, and place a vibrating tuning-fork over the middle of the forehead or over the center teeth; you will notice that the fork is best heard in the blocked side. This is exactly what happens when the ear is blocked by disease. This block may be a plug of wax, or middle-ear disease; as long as the nerve is intact the same response will be elicited. If the nerve is affected, this will not hold true; in fact, the greatest perception will lateralize to the better ear having a better nerve. We call this the Weber test. It lateralizes to the bad ear if the deafness is due to disease of the conducting apparatus. It lateralizes to the good ear if the deafness in the bad ear is due to nerve involvement.

We will now try another test: Place the vibrating fork over the mastoid region until you cease to hear it; then bring it in front of the ear and you will find the sound will reappear. You will continue to hear it for some little time. Normally the fork is heard about twice as long in front of the ear, that is, by air, as it is over the mastoid, which is by bone. If the length of time it is heard by air is diminished, or as it often happens, is even less than by bone, it is a sign of conductive deafness. This is known as the Rinne test. It is spoken of as Rinne+ when air conduction is longer than bone conduction, and Rinne— when bone conduction is longer than air conduction.

There remains one more important test, and that is to compare the time when you hear a tuning-fork over the mastoid region with the time the patient hears it. If your ear is normal and you hear the fork longer than the patient it shows that the patient's bone conduction is diminished, indicating nerve deafness. This is known as the Schwabach test. If the patient hears the fork ten seconds less than you do we say he has a Schwabach-10, indicating definitely the extent of his nerve involvement compared with a normal ear. If he hears the fork as long as you do or longer you can definitely say that his nerve is not involved.

So far we have been speaking of one ear being involved; the same is true when both ears are involved. All tests except the Weber are applied to each ear separately, and the Weber will lateralize to the worse side if the deafness is conductive, and if the nerve is also involved it will lateralize to the side in which the nerve is least involved.

The other tuning-forks which I mentioned are merely forks of high and low pitch. In conductive deafness the sense of hearing is lost first to low-pitch sounds; in nerve involvement or perceptive deafness the high-pitch sounds are first lost to the ear. The Galton whistle is also used to test for the loss of hearing to high-pitch sounds.

These diagnostic tests are sufficient for most of the ordinary cases. They separate for us the cases of nerve deafness from conductive deafness. As to the causes and treatment of deafness, we will now turn our attention to them for a brief consideration.

In speaking of conductive deafness, after the external ear has been eliminated, we mean, of course, deafness caused by pathological conditions in the middle ear, and those we will consider first. Disease of the middle ear caused by the way of the external canal is rather rare, unless it is due to trauma. Practically all trouble in

the middle ear can be traced to an infection through the Eustachian tube. As the opening of the tube is in the nasopharynx it is there where we will find most causes of trouble. Inflammations of the nose and throat, acute or chronic, mild or severe, are direct causes of inflammatory processes in the middle ear that lead to deafness. These inflammatory processes are the result of direct extension to the middle ear. In children this is more forcibly emphasized when we recall that their canals are much shorter, more patulous, and have a straighter and more direct course than in the adult. This accounts for the more frequent occurrence of acute inflammation in these patients. Such inflammations when acute are graver conditions in themselves than the symptom of deafness, which attracts but little attention. When acute conditions recur often enough they leave a marked effect on the function of hearing. Chronic nasal conditions like chronic catarrh, sinusitis, chronic tonsillitis, adenoids and other forms of obstruction like a deviated septum, polypi, or enlarged turbinates, have an insidious and persistent effect on the hearing, and while they work more gradually they have a more destructive action and are often only discovered when the disease is quite advanced and treatment more difficult.

Specifically, the acute conditions which cause interference with hearing are acute tubal obstruction, acute catarrhal otitis media.

Acute tubal obstruction: This may be caused by an acute postnasal inflammation which has produced a swelling around the mouth of the tube, and the latter becoming blocked there is interference with hearing. These cases, while not troubled much by their so-called cold, will be quite anxious about their sudden impairment of hearing. The best relief for them is local treatment around the opening of the Eustachian tube with 10-per-cent cocaine followed by 25-per-cent argyrol, and then prescribe some mentholated albolene to drop into the nose.

Some immediate relief is often obtained by catheterizing the Eustachian tube after thoroughly cleansing the postnasal space. If care is not taken with regard to cleanliness of the nose, infection may in this way be carried to the ear. Eustachian catheterization being a very important procedure, we will devote a paragraph or two to the subject shortly.

An acute tubal obstruction is often met with in the bathing season, your patient complaining of deafness and ringing in the ear after he comes out of the ocean or a swimming pool. If it is not due to a swollen plug of wax in the external ear, it is most likely due to some water in the Eustachian tube, or even swelling around the tube mouth due to some irritation. The treatment is the same; Eustachian catheterization will usually relieve them immediately.

In so far as acute catarrhal otitis media and acute purulent otitis media are concerned, there are other things about them to worry one than the deafness, and to say much about them will be digressing from our subject. One thing that should be mentioned, however, is that if these conditions occur too often they do become part of the subject of this paper, and very much so.

We will now see what chronic conditions of the middle ear influence the hearing function. Chronic purulent otitis media—that is, a chronically discharging ear with all its destructive action—causes less impairment of hearing in many cases than one would suppose. Destruction of the drum membrane or even some of the ossicles is not incompatible with fair hearing. The sequelæ of chronic purulent otitis media, however, do have a profound effect upon hearing. Granulations may form and fill up the entire middle ear and protrude into the canal in the form of polyps. Cholesteatoma, which are masses of epithelium, pus, and granulations, may form and fill up the entire middle ear and mastoid process, and if continued long enough will destroy the entire bony structure in the vicinity. Both of these conditions cause deafness, and while in the first instance local treatment may be employed, like removal of

polyps with a snare or suitable forceps, cholesteatoma calls for a radical mastoid operation. Treatment of the chronic discharge at first, and while there is still good hearing, is merely cleansing, which could be carried out by the general practitioner, as well as removal of polyps, touching up and controlling of granulations with silver nitrate. Vaccines have proven of value in many cases. Foci of infection should be looked for and removed, like infected tonsils, purulent nasal conditions, etc.

The other chronic ear condition, and the most important from the point of hearing, is chronic catarrhal otitis media. This is a condition characterized by hyperplasia of the mucous membrane of the Eustachian tube and middle ear. There is fibrous tissue formation with bands stretching across the middle-ear cavity interfering with the function of the ossicles. The Eustachian tube is often constricted, interfering with hearing. These cases form by far the majority of those that come to the physician for the relief of deafness; so we will take up the diagnosis and treatment of this condition a little more fully.

The chief complaint in these cases is impaired hearing which came on gradually. There is some ringing in the ears or other form of noises, and often a sense of fulness in the ear. It is usually bilateral, and rarely do patients come for treatment of this condition in its early stages. When their deafness becomes marked or their tinnitus annoying, then do they seek relief. To make a diagnosis in these cases is often easy, all one has to do being to examine the appearance of the ear drum and by means of the tuning-forks eliminate nerve deafness.

We will attempt to describe the normal appearance of the drum membrane in order to compare it with that of the membrane in chronic catarrhal otitis media. Normally it is an oval-shaped disc placed obliquely in the canal of the external ear. Its color is a glistening gray and it is somewhat transparent. At its upper part one will notice a very faint triangle with its base formed by the upper part of the drum. The apex is about at the upper quarter of the membrane, and from it the sides will be seen extending backward and forward, forming what are known as the anterior and posterior folds. From the apex downward and slightly backward will be seen a faint line running to about the center of the drum. This line is formed by the malleus handle, the lower part of which, terminating in the center of the drum, is known as the umbo. At the umbo will be found the apex of a cone of reflected light about the size of the point of a sharpened lead-pencil. The cone is directed forward and downward, in the left ear to a point which may be represented as being 7:00 o'clock on the face of a watch, and in the right ear at 5:00 o'clock. These are the normal landmarks of the ear drum, and you will notice that everything in the normal is faint, delicate, and clear.

In the abnormal membrane all of these things may be disturbed. It may be in the change of color like red in an acute inflammation, or lusterless as in chronic catarrhal otitis media. It may have white calcareous deposits. The cone of light may be distorted or absent. When the ear drum is retracted all of the lines become unusually prominent. The anterior and posterior folds become very distinct, the malleus handle becomes very conspicuous, and instead of having the normal downward and backward slant it assumes a more backward and elevated direction. The short process of the malleus, situated at the upper end of the handle, which is hardly visible in the normal, becomes prominent in the form of a bold yellowish spot at the junction of the anterior and posterior folds. These signs of a retracted membrane are truly the signs of the membrane in chronic catarrhal otitis media. This picture must be borne in mind in order to make a diagnosis of this condition. The tuning-forks will show the Weber to the worse ear, shortened air conduction, normal or increased bone conduction, and loss of hearing to the very low fork. Armed with these facts you make the diagnosis. You eliminate nerve deafness by the absence of

shortened bone conduction, and by the fact that the ear drum is usually normal unless there is a coexisting chronic catarrhal otitis media.

What can we do for these cases? The first thing to do is to find a probable cause in the nose and throat and remove that before any results can be hoped for in the treatment of the ear. Look for diseased tonsils, adenoids, sinusitis, and any form of nasal obstruction or nasal catarrh. Whichever of these conditions require surgical measures this should be instituted, and where local treatment is indicated that should be given. Then we come to the treatment of the ear proper. The only weapons we have are, first and most important, the Eustachian catheter, then Eustachian bougies, and the otoscope for massage of the ear drum.

I might as well state right here that although the general physician keeps shy of these instruments, it is my belief that with a little practice he could employ them as well as the specialist. If I cannot make you believe this then everything I have said till now is wasted, because even if you are able to distinguish one condition from another and make a diagnosis, but become afraid of a little procedure which is the basis of treatment in most cases, you are just as well off without this information, and you might as well refer your patient to an ear specialist in the first place. I do not favor any man doing operative work at random unless he has had opportunity to practice whatever operation he wishes to undertake under efficient guidance; but I believe that all office treatments in any specialty can and should be undertaken by a general practitioner.

If you are gentle with the catheter and observe a few simple rules you will not have any trouble. At first, until you become more proficient, it is best to apply along the floor of the nose as well as in the nasopharynx in the region of the Eustachian tube a solution of 10-per-cent cocaine. Then slowly introduce the catheter point down along the floor of the nose until the nasopharyngeal wall is touched. Then try one of the following two procedures: Turn the catheter outward and gently pull forward until a prominence is felt; then slide over this, and you will strike a depression, in which the opening of the tube is found. The other way is to introduce the catheter until the pharyngeal wall is touched, and then turn the catheter toward the septum and pull forward until the posterior edge of the septum is felt. When in this position turn the catheter around outwardly and the tube will be entered. In guiding the catheter into the tube the loop at the other end should point to the outer canthus of the eye of the side treated, when the catheter is in the tube. To test whether you are in the tube, connect your ear with the patient's by means of a rubber tube with appropriate nozzles (a diagnostic tube) and force some air into the catheter with a Politzer bag or compressed air. If your catheter is in the tube you will hear a whistling sound.

The treatment of these cases consists in introducing the tube and inflating with air and then massage with the Siegel otoscope. In cases that do not respond to this treatment you go a step further: after you have made sure you are in the canal you introduce bougies in gradually increasing sizes and leave them in for fifteen minutes or longer, the object being to gradually dilate the Eustachian tube. This treatment if persisted in once or twice a week will help a good many cases. If you do this much for your patient it is as much as the average patient receives from the otologist. Other measures are often employed, like medicating the Eustachian tube with iodine fumes, chloroform vapors, medicated bougies, and hot air forced into the tube through the catheter, but you will notice that the basis of these treatments is the proper introduction of the Eustachian catheter; the rest is easy.

In the treatment of these cases one must not overlook a relaxed membrane, in which case inflation is contraindicated. This condition is recognized by great bulging in points of the membrane, and of rapid flapping to and fro of the relaxed portions of the membrane upon inflation and suction

with the otoscope. The treatment in these cases consists in attempting to shrink the membrane by causing inflammatory irritation in the relaxed parts in the hope of getting them to contract subsequently. The best substance now in use for the purpose is cantharidal collodion applied sparingly on an applicator.

We will now divert our attention to the class of cases for which, unfortunately, nothing can be done in most instances, namely, nerve deafness. We should, however, be able to recognize them in order to differentiate them from cases of conductive deafness, for which there is some hope in treatment.

To diagnose nerve deafness, from whatever cause, we need but find a shortened bone conduction and a loss of hearing to high-pitch sounds. The actual cause we will elicit from the history of the case. Thus, for instance, in old age there is a marked loss of hearing supposedly due to senile degeneration of the auditory nerve. In people who work in noisy places, like blacksmiths, machinists, boilermakers, etc., you will find a history of the employment. This kind of deafness is known as boilermaker's deafness. Often one will find a perfectly normal ear drum in these patients although their hearing is markedly impaired. They will also be able to hear better in noisy places. Syphilis is a frequent cause of nerve deafness; the history and a Wassermann test will aid in establishing the diagnosis. These cases often improve under mercurial and iodide treatment.

There are two other conditions which should be mentioned, and they are otosclerosis and Ménière's symptom-complex. The first gives a marked deafness with distressing tinnitus, and unless complicated by catarrhal otitis media the ear drum is normal. The cause is an absorption of normal bone and replacement with spongy bone in the internal and middle ear, bringing about a fixation of the stapes. The characteristics of this disease are marked deafness, tinnitus, normal ear drum, very much prolonged bone conduction, sometimes 20 to 25 seconds above normal, and there is loss of hearing for low sounds. The disease is very distressing to the patient and nothing can be done for him.

The other condition, Ménière's disease, as it is often called, although not very common, is more likely to be met with by the general practitioner than by the otologist. It is a severe attack of the following symptoms, which are quite alarming: There is a sudden onset of intense vertigo, nausea, vomiting, severe tinnitus, and profound deafness. These severe symptoms are probably caused by an extravasation of blood in the internal ear. Owing to the suddenness of the onset, with the alarming aspect of this condition, the general physician will most always be called before the specialist. However, I am sorry to state that outside of rest and general sedatives, and cold applications to the head, very little can be done.

As to deaf-mutes, their only salvation lies in training in the art of lip reading and other methods of communication taught them in institutions. There is no medical aid for them.

This about completes the picture of deafness. There are merely a few words I wish to say about mechanical aids to hearing that one is often asked about. The principle upon which they are based is merely to collect more sound waves and transmit them to the ear with greater intensity. They consist of trumpets, or electrical receivers which intensify the sound, and transmitters. They help a little and are worth while trying. The disadvantage is their conspicuousness, and their collection of many annoying extraneous sounds. There are instruments on the market for which the manufacturers claim to have overcome these deficiencies.

In conclusion I wish to call your attention to the difficulty in helping the deafened individual, and that his best salvation would have been in prevention where that was possible. Nasal disease, adenoids, and diseased tonsils should be attended to early. This becomes apparent when one compares

the number of cases of otitis media to-day when the tonsils and adenoids are "slaughtered," as some like to say, with the days previous to it; you will find them to have been more numerous then than now. This certainly held true in the clinics of my chief, Dr. Coates, at the Pennsylvania and Polyclinic Hospitals. All conditions of the nose and throat should receive early treatment. These things being done will save many an individual from walking about in a monotonous silence and the distress of seeing people talk to them and yet not hear.

Finally, I cannot resist the temptation to again point out that the measures employed in relieving these patients are few and simple, and with but a little practice the general practitioner can employ them in his routine office work in the vast majority of cases and need not be obliged to refer them to a specialist.

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Do Present-day Efforts Toward the Elimination of the Second Stage of Labor Constitute a Forward Step in Practical Obstetrics?[1]

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This subject was chosen, and paper written, at the request of your programme committee, for the purpose of provoking a more or less entertaining if not entirely profitable debate on some of the present-day obstetric methods.

In recent years there has been a distinct and well-recognized move throughout the obstetric world toward the reduction of the dangers and the amount and severity of suffering attending labor, by the elimination of all or the greater part of the second stage.

The question you are called upon to answer to-night, is: Has this move proven itself to be in the direction of real obstetric progress? Is it a forward step in practical obstetrics, or but a passing fad among experimenters and idealists?

In order to answer this question, it seems to me you must raise and answer two other questions:

1. Do the methods and procedures employed in this move yield results as free from trauma, infection or subsequent invalidism to mother and child, as those following other and more generally accepted methods?

2. If they do, to what extent are they practical and capable of general employment?

I think no one will deny that if the first of these two questions can be satisfactorily answered in the affirmative—that is, if the various methods and procedures now being used to shorten and reduce the amount of suffering in the second stage of labor, do give as good results as the older methods—then we should by all means at our command endeavor to find a way to make them practical and capable of more general employment, for there is absolutely no question about the desirability of reducing the severity and amount of suffering in the second stage of labor.

Those of us who are no longer willing to believe that the process of childbirth among civilized women is a normal, physiological, and therefore harmless function, but who, on the contrary, believe that it has become by very reason of its unbearable pain and inescapable traumatism a

[1] Read at a meeting of the Philadelphia Clinical Association, February 13, 1923.

purely surgical procedure, which should be conducted under the same general principles for the relief of suffering, infection, and shock, that are employed in any other field of surgery—those of us, I say, who hold these views, along with all the mothers of the land who have had the good fortune to escape the unnecessary sufferings of the second stage of labor, have felt that we might so far dare to challenge the time-honored and almost unbreakable traditions and practices of the past, as to suggest that the day has come, in the obstetric world, for the substitution of the surgically trained obstetrician's definite skill and art, for perverted Nature's painfully prolonged, uncertain, and fearful process. We know that we shall be condemned for our trouble, and that the popular verdict of the present will be against us, but this gives us no fear, for we are equally sure that time will correct the erroneous decisions of to-day, and that the methods we are about to describe, or some such methods, having for their purpose the humanitarian relief of the agonies and injuries of labor, will prove ultimately to be a forward step in practical obstetrics.

Now to put this matter as clearly as possible, and to enable you to pass judgment on the questions at issue, it will perhaps best serve the purpose to describe in more or less detail just how some who have the temerity to hold such heretical views proceed to conduct a delivery, where the aim is to greatly shorten or to eliminate the second stage of labor.

The first step of importance is to carefully explain to the patient the characteristic differences between the two stages of labor, and to make clear to her that the method about to be employed in her case will probably require considerable time for the first stage, but that she will be given such narcotic help as is necessary to enable her to tolerate this possibly prolonged period, without undue suffering or fatigue, and that when this stage of dilatation is satisfactorily over, she will not be compelled to suffer further, for she will at once be given a general anesthetic, and her delivery will be completed without pain or effort on her part. And this fact in itself is, in my opinion, of very great importance to both doctor and patient. Knowing that we are to greatly shorten the second stage of labor, we can both afford to take longer time, if necessary, for the first stage, and take it, too, in greater peace of mind, and certainly with much greater safety for the patient, for as we all well know, many of the most serious injuries and the most dangerous infections result from impatience and haste in the first stage of labor. Such injuries and infections being chiefly cervical, and therefore doubly serious in their immediate and remote effects.

Just for the sake of completeness, and to answer any possible queries that may arise at this point, I will say briefly that it is our regular routine practice at the Samaritan Hospital to give from 1/12 gr. to 1/4 gr. of morphine, with 1/400 gr. to 1/200 gr. of scopolamine, as soon as the patient begins to complain, or as soon as labor is certainly and actively established, and to repeat this initial dose, or some dose, of one or both of these drugs, as soon and as often as is necessary to make the labor reasonably tolerable, to aid dilatation (which it undoubtedly does), and to conserve the nerve energies of the patient; remembering always, of course, on the child's account, to aim to give no morphine within an hour and a half or two hours from the time of expected delivery.

Vaginal examinations have been entirely abandoned in this stage of labor, and the completion of dilatation, or degree of descent, is learned by observation, by palpation, or, if necessary, by digital examination per rectum.

At the end of this first stage—that is, when dilatation is complete or very easily completable—or when it is evident beyond a question that longer effort on the part of the patient will be useless or dangerous, then the time for the application of the obstetrician's art has arrived.

At this point the first important question arises as to the method of delivery, namely:

Shall this particular delivery be made by the vaginal route, or by the abdominal, through Cæsarean section? In all but a relatively small number of cases, of course, delivery through the normal route will be the decision.

Having decided that this is a case for vaginal delivery, that anesthetic will be selected which in the judgment of the operator is best suited to this individual patient, unless, perchance, the competency of the anesthetizer becomes a deciding factor. In the large majority of our own cases it is chloroform; not infrequently ether is chosen, and in all pronounced toxemics, especially those requiring Cæsarean delivery, spinal anesthesia is invariably used.

The patient is now placed on a suitable bed or table, in the dorsal position, and whenever possible with human leg-holders, so as to permit of that flexibility of movement that will give all the advantages of position, without danger of the injuries and postpartum suffering which, I am persuaded, rather frequently result from delivery in the exaggerated lithotomy position.

Passing over the technique of the final preparation of the patient, draperies, catheterization, etc., the sixth step, and in my opinion a most important one, the value of which has only recently begun to be recognized because of these methods of artificial delivery, is that of the thorough cleansing, under anesthesia, of the introitus and vagina with green soap and lysol solution. Notwithstanding the well-grounded objections to the old-time antepartum douche, there is no question in my own mind that this entirely different and much more thorough and efficient effort at antepartum cleansing is a decided factor in reducing the incidence of local or general infection to the mother, and of ophthalmia neonatorum to the child.

Along with and following this process of vaginal cleansing goes the process of vaginal dilatation manually to the extent that is deemed feasible without injury to the deeper structures. This is one of the several very valuable practical things the profession has learned from Potter of Buffalo, even where it has not accepted his practice of routine version.

Now, having thoroughly anesthetized the patient, and carefully cleansed and dilated her birth-canal, the time for the second decision as to the method of delivery is at hand. The first, as you will recall, was as to the selection of the vaginal or abdominal route. Having in this case chosen the vaginal route, we must now decide whether the best interests of mother and babe indicate the use of the forceps, or delivery by version. One or the other of these two methods will have to be selected. With either choice the object to be attained is the same; the only question, therefore, is as to the best method for this particular case, under its own peculiar conditions and circumstances.

If after due consideration of all factors involved, including that of the experience of the doctor, the decision at this point falls upon version, then version by the Potter technique is the only consideration, for there is no longer any question that this master obstetrician, with his unequaled, unprecedented experience, speaks with the voice of final authority on this particular subject. I am sure it is wholly unnecessary to here repeat the further steps in this technique. That it is more easily and more safely done than any other method of version is the verdict of all who have given it an unprejudiced trial, but that it is to become the method of choice for routine delivery, regardless of conditions and circumstances, is so far as I know unclaimed and unclaimable.

If instead of version forceps delivery is decided upon—and in the majority of my own cases it is—then there still remains to be made the third and final decision as to the method of procedure, namely, shall this particular forceps delivery be accomplished with or without the aid of perineotomy? If we decide to do it without perineotomy, it is because the relative size of the child and the degree of success attending the "ironing-out" process (*a la* Potter) have convinced us that delivery may be safely and reasonably quickly performed without

the aid of this operation; and in a fairly large percentage of cases it undoubtedly can, if the anesthesia is satisfactory, and the semi-Walcher position is maintained.

But if, on the contrary, a relatively large child and an unsatisfactorily dilated outlet make it entirely improbable that delivery may be accomplished without undue delay or traumatism, then perineotomy, preferably of the lateral oblique type, is unhesitatingly done. I say unhesitatingly done, because a fairly large and carefully checked-up experience with perineotomy extending now over a period of more than ten years, has convinced me beyond any question of doubt that this operation when properly performed as a part of the well-known prophylactic forceps delivery gives immediate and final results which will not suffer in comparison with those following any other method in use to-day. And I say this not alone from my own experience, but from the testimony of the large and growing experience of leading obstetricians throughout the country.

These, then, are the successive steps in the conduct of the so-called "artificial delivery," which has for its double object the prevention of unnecessary suffering and the production of better results in obstetrics. Summarizing, they include an easier, safer, and possibly longer first stage, which permits of a better test of labor, and is therefore of great practical value in helping to determine the best method for delivery.

The first question to be settled at the end of this stage (if it had not already been settled by the very nature of the case) is as to the advisability of attempting delivery by the normal route. If Cæsarean section is considered best, then that operation ends the labor without further suffering. If not Cæsarean, then under complete anesthesia the vagina is cleansed and manually dilated, which enables a safer decision on the second question of method, namely, as to forceps or version. If version is selected, the delivery is quickly and painlessly ended. If forceps is decided upon, then perineotomy is done in many primiparæ and in multiparæ that have previously had proper care, the child is removed with relatively short and easy work, and the incision is closed by a technique that need not here be recited, but which gives entirely satisfactory results. Where perineotomy is not considered necessary, a little more time may be required for the birth of the head, but in either case the period of complete anesthesia is not long, and the patient rather quickly rouses from her sleep, very little the worse of her labor; or as we prefer in many instances, she is given immediately after the birth of the child a rest-producing hypo of morphine and is allowed to awake later on with a surprisingly small amount of that nightmare-like recollection of horrible suffering and dread and fear so common to those who are yet permitted to follow the good old-fashioned scriptural way of prolonged and "multiplied pains" in faithful obedience of the Adamic curse.

In conclusion, I shall but very briefly suggest some of the additional reasons why both doctor and patient have found these methods so entirely satisfactory that neither of us would willingly go back to the antiquated ways of yesterday.

"Surgical delivery"—for that is what the elimination of the second stage of labor means—more effectively removes the horrors of childbirth than any other measures yet devised and thus renders a great service to the race, by making women unafraid of future pregnancies.

By conserving physical strength and nerve energy—by preventing exhaustion, and traumatism, and shock—it undoubtedly promotes more rapid convalescence, with all that that means to lactation and the welfare of the child, and to involution and the freedom from gynecologic ills.

Personally, I no longer have the slightest doubt that by these methods we come nearer to leaving the cervix, the vagina, the pelvic floor and the introitus in normal, anatomical condition, in a far larger percentage of cases, than can possibly be found among those delivered by the orthodox methods of the past.

But our friends tell us that the elimination of the second stage of labor is not only unnatural and sinful, but that more than anything else it is impractical.

In answer to this I beg to submit that anything is practical that we are prepared to do, and if those permitted to do obstetric work to-day are not qualified to do it as it should be done, and as suffering motherhood demands that it should be done, then to point out in this very definte way the absolute necessity for modern obstetric training as a prerequisite to obstetric practice is certainly a forward step in practical obstetrics.

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Intestinal Perforation Complicating Typhoid Fever—A Report of Three Cases with Recovery

BY MOSES BEHREND, M.D., F.A.C.S.

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Perforation in typhoid fever is such a rare occurrence at the present time on account of the greatly diminished numbers of cases in Philadelphia that it seems to be of more than usual interest to be able to present three cases that came under my care in the past six months. It was not an uncommon occurrence before the new filtration plant was completed for every general practitioner to have several cases of typhoid fever to treat. It is now a matter of history that in some hospitals there were wards relegated for the treatment of this disease alone.

According to the Monthly Bulletin for April, 1922, the death-rate from typhoid fever from 1900 to 1910 ranged from 21.7 to 73.3 per 100,000. Compare this with the years 1910 to 1921, when the death-rate was from 2.3 to 17.5 per 100,000.

As a result of the prevalence of typhoid fever, perforations were frequently encountered by the surgeon. They became expert in the treatment of these cases, but still the mortality was frightful. Many cases died because they were not diagnosed early enough; others succumbed on account of various methods of treating perforations at operation. Physicians were and still are handicapped on account of the faulty interpretations of the laboratory findings. Even now in a given case too much stress is laid upon a leucocytosis or a leucopenia. A leucopenia does not mean a perforation does not exist; a leucocytosis and a high polymorphonuclear count portends danger —the presence of a serious peritoneal inflammation. Laboratory findings must never be considered without a study of the physical signs accompanying the disease. Notwithstanding all that has been said there is still too much importance given these findings in preference to the physical examination.

A case in point illustrates the foregoing:

Case 1.—P. C., aged 10. Admitted to the Mt. Sinai Hospital, November 27, 1922. The child was in the hospital about two months before, when a diagnosis of bronchopneumonia was made. The Widal test at this time was negative. The hemoglobin was 90 per cent, R. B. C. 4,800,000, W.B.C. 6000; polymorphonuclear of 64 per cent. Von Pirquet test was positive. On November 1 he was discharged as cured.

He returned again to the hospital November 27, complaining of severe abdominal pain. Chest developed scattered sibilant râles. The spleen was enlarged. In the right iliac fossa were erythematous spots

resembling rose spots. Widal test was repeatedly negative, the test being performed every five days. On December 13, about 8:30 A.M., the boy was seized with severe abdominal pain, followed by a board-like rigidity, accompanied by a drop in temperature from 104° to 100°. The pulse was 140. The leucocyte count on his second admission was 6600. When the perforation occurred the leucocytes still remained low for several hours, when they reached 10,800 at 7 P.M.

I was asked to see the patient about 1:30 P.M. At that time the child was suffering intense pain, on account of which a dose of morphine had been given. (The administration of morphine is always poor practice before consultation with the surgeon.) While the symptoms in this instance were not entirely masked, there was abeyance of the general manifestations seen in the morning. The abdomen was rigid throughout. When any part of the abdomen was palpated the entire abdominal wall was thrown into a spasmodic contraction. There was no vomiting or distention; on the contrary the abdomen was scaphoid in character. A diagnosis of perforation of the intestine complicated by general peritonitis as a result of the leakage was made. This diagnosis was not concurred in by the pediatrist because the W. B. C. numbered only 6600. Specific orders were given that if there was no improvement within two hours the resident physician was to notify me, when an immediate operation would be performed. Notification was not sent however until 7 P.M., when the W. B. C. rose to 10,800. We were more firmly convinced that perforation existed, and I informed the pediatrist that if he did not allow an operation I would have to retire from the case. Finally consent was given, operation being performed at 9 P.M. On opening the abdomen fluid and gas escaped under considerable pressure. A perforation was found some distance away from the ileocecal valve. Another ulcer in the preperforative stage was proximal to the last, and still another ulcer with considerable induration was found quite close to the ileocecal valve.

These ulcers were at the site of Peyer's patches. The patient had a rather stormy convalescence, the temperature gradually coming down to normal. At this writing the patient seems to be suffering from a relapse.

This case illustrates an important point which must always be borne in mind. The symptoms did not follow the typical textbook description. Too much importance was put upon the low leucocyte count by the pediatrist. When the physical signs are paramount and at variance with the leucocyte count, one should always put more dependence on the physical signs. The most important signs were the drop in temperature when the perforation occurred and the intense universal rigidity of the abdomen.

The following case is somewhat like the previous one in that the leucocytes were of very little assistance to us in making a diagnosis:

Case 2.—L. W., aged 8; residence Cheltenham. In February the patient had scarlet fever. She was well till July 1. All the water used by the family was drawn from a well 80 feet deep. Typhoid fever developed in the neighborhood some time before the patient was taken sick. It resulted in death of one of the neighbors. The patient and the immediate family ate their meals at the house of mourning. On July 1 the child was taken sick with chills and fever. The fever continued high. The appetite remained good. On July 21 she was seized with severe abdominal pain. She was sent to the Jewish Hospital with a diagnosis of probable perforation by Dr. H. D. Johnson of Cheltenham. I concurred in the diagnosis notwithstanding the fact that her temperature on admission was 104°. In this instance there was apparently no drop in the temperature which one would expect after perforation.

Widal reaction on several occasions was negative. Leucocyte count was of no assistance, being 6200 on admission and

rising to 9000 in two hours, the second count being announced after the operation.

Here again physical examination of the abdomen made the diagnosis. The abdomen was rigid throughout, but not nearly as rigid as the abdomen of the child previously described. There was no nausea or vomiting.

Two hours after admission the child was operated upon. Novocaine and nitrous oxide gas and oxygen were used. Free fluid was found in the abdomen, and about three inches from the ileocecal valve a perforation was located in the center of Peyer's patch. The child was discharged cured one month after operation. She is still in perfect health, having gained much weight since leaving the hospital.

This case, like the former, did not follow the typical text-book description. The abdomen was flat in a greatly emaciated child, the temperature was high; there was no vomiting, which one would expect in a case of general peritonitis. The spleen was not enlarged and the liver dulness was not effaced.

Case 3.—The history of the third case was interesting from the fact that, like the first case reported, he was in the hospital a short time previously for another acute infection which was diagnosed influenza. I am indebted to Dr. Harold Goldburgh for the privilege of operating on this case. On the first admission to the Jewish Hospital, April 3, 1922, he remained in that institution twelve days. Widal was negative, leucocyte count 5200, R. B. C. 3,970,000, hemoglobin 80 per cent. Feces were negative for typhoid bacilli. His second admission to the hospital was April 28. On this day the Widal was positive. Ten days after admission the patient complained of severe pain in the lower part of the abdomen which was accompanied by a chill. The rupture occurred about 2 P.M. I saw the patient about 10 P.M. and confirmed the diagnosis of a perforation. I operated on him shortly thereafter. At operation we found a perforated ulcer at the site of one of Peyer's patches. Another ulcer was found in the preperforative stage, around which a piece of omentum was placed.

The main features in formulating our diagnosis in this case were the sudden onset of pain with a drop in temperature of three degrees, a rigid abdomen not distended, and an increasing leucocytosis which went from 5400 to 14,200 in a few hours.

In each case a culture was made from the fluid oozing from the perforation. In cases one and three we found the colon bacilli, in case two streptococci.

In case one the perforation occurred on the seventeenth day of the disease; in cases two and three on the twenty-first and tenth days respectively. None of the cases was given ether. Case one was given novocaine and chloroform, case two received nitrous oxide gas and oxygen, case three nitrous oxide and oxygen only.

Technique.—In all cases the same technique was employed. Very little time was consumed after the abdomen was opened to reach the perforation. A purse-string suture of catgut was first used to close the ulcer, followed by linen thread suture also used as a purse-string. The great omentum was placed over the inverted ulcer. Ulcers that were found in the preperforative stage were also covered with omentum. A rubber tube was placed in the pelvis and the fluid was withdrawn every two hours. The tubes were removed on the fifth day.

In conclusion I would say that probably the most important lesson taught by these cases was the fact that they did not follow the typical text-book descriptions of a perforation complicating typhoid fever.

In every case the abdomen was scaphoid instead of distended; the liver dulness was not effaced.

While the temperature dropped several degrees in two cases it never reached the normal.

Pain and rigidity were the main signs upon which the diagnosis was based.

Two cases were atypical because the Widal reaction was negative.

Attention is called to the use of a purse-string suture with inversion of the ulcer.

The Dangers and the Duties of the Hour[1]

BY HOBART AMORY HARE, M.D., LL.D.

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To be chosen to address this very representative body of medical men who come from widely separated portions of this great continent to meet together for the benefit of themselves and those who depend upon them when in need of help, is an honor which I keenly appreciate. This city, as you well know, is the site of the first medical school founded in this country, and its sister institution, the Jefferson Medical College, is soon to celebrate its centenary of existence. It is appropriate, therefore, that this gathering should take place in a spot where it can produce so much influence, direct and indirect, and where in time it may acquire facts of interest.

Surfeited as you are by lectures and demonstrations in subjects pertaining to the active practice of our profession, in the sense of its bedside experience, it has seemed to me appropriate to discuss questions which may be said to be of importance to the medical body politic, not only because such themes, if I can deal with them successfully, are pregnant with importance to all of us, but also because they deal with our relations with the world of people outside our ranks whom we influence and who influence us.

Medical men being a part of the great human family are as subject to surrounding influences as other people and suffer or prosper if matters which concern them in particular, or the people in general, are abnormal.

There can be doubt that the whole world for at least two decades has been in a fever of unrest and like all restless mortals great bodies of men and women have become dissatisfied with things as they were, or are, and proceeded to invent plans for their betterment, many of which are excellent but some are not, or at least are questionable. These plans are educational or commercial as well as political and their promulgation has increased restlessness in many cases rather than allayed it, although we are beginning to see daylight after darkness and to simmer down from the boiling point to that which may be called normal warmth.

One of the results of this dissatisfaction with existent things has resulted in what is known as "standardization," a term at present much perverted and misinterpreted. Many persons think when a thing is standard it is good, but the dictionary will tell you that a "standard" is something fixed by authority which is not necessarily good, for there can be a standard of quality in counterfeit money and a safe blower considers that he has a higher standard than a pickpocket. Indeed a standard may be even as is the definition of a model, namely, a small and inadequate representation of the real thing. That there must be standards of excellence is of course self-evident. The point is that such standards should not be accepted as good because they have this title, but because common sense shows them to be useful and wise. The status of every standard so-called should be determined by virtue of its expediency and utility, or in other words, by the results which accrue from its establishment. Does it meet the needs of the people for whom it is established and is it so elastic as to be adjustable to the widely separated groups to which it is to be applied?

Be this as it may we now have an excess of rigid standards for masses, classes and individuals often because a small minority of positives become active and a vast majority of other people as negatives lie dormant, because they are so busy with their own affairs that they have enough to do already. The latter then wake up to the fact that they must follow certain lines whether they agree with them or not. Thus a given number of people concluded that alcohol should be practically unobtainable

[1] Part of an address, by invitation, delivered at the general sessions, by the American Congress on Internal Medicine, Mitchell Hall, College of Physicians, Philadelphia, April 15, 1923. (For the complete text see *Annals of Clinical Medicine*, May, 1923.)

for purposes for which the human race had used it for thousands of years. When counties could not form a standard, States did; when States failed, Congress standardized the whole matter, or tried to, with results still in dispute except the development of the greatest outbreak of lawlessness ever known in this land. I am not speaking for the "wets" or the "dries" or bold enough to take sides in this address.

The point is that a standard set for some does not work with others.

The States formed Railroad Commissions and they made standards for the railroads so that on one side of an imaginary line one rule holds good and on the other side another holds good. The Interstate Commerce Commission standardizes rates everwhere, while the United States Labor Board tries to standardize wages everywhere, although rates and wages ought to vary with local conditions. One State says that all bottles containing powerful hypodermic tablets shall bear yellow labels and the next one says blue labels, while a third says red labels, and if a red label is sold by error in a blue label State there is a penalty. One western State says that a man may smoke but not in public! This is standard in Utah. Was this a chance to get even with the majority of those citizens who said polygamy was a bad standard and therefore have their personal liberties restrained if they step across the border?

Furthermore, a standard of effort may lower ability to mediocrity, as when a labor union forbids a man of marked industry or ability or skill to do more than his lazy or incompetent fellow.

But some one will say, what has this got to do with medical men or medicine itself? It has a great deal to do with them, for standards can do as much harm with us as elsewhere. You can standardize inanimate things but not animate things, for all animate things differ one from another naturally, and when disease throws in another factor the standard is still more upset. The first thing a student learns when he begins practice is that no human being reacts to disease in the same manner as another and that no human mind reacts to his mind like another. He learns that once in a hundred times will all the so-called standard symptoms be present to justify his diagnosis and about equally frequently will the standard dose of any drug fit every patient's needs. These facts trouble the practitioner and yet they are the chief reason why his life is not a grind like that of the man who turns one nut five times every minute for eight hours in Ford's factory. There is probably no human pursuit in which standards when set up have to be so often changed, to meet needs, as in our calling.

At the present time we have standards in medical education, standards in ethics originated within our own ranks, and we have standards as to what we shall do set down by law, most of the latter being due to a desire on the part of some people to make others do as they think. In law a layman asserts that a physician can only order one pint of alcohol or whisky in ten days for one patient. This standard entirely ignores the right of a physician to use judgment and the right of a patient to benefit by it, but this standard, while preventing us from ordering a pint for a 300-pound man in ten days, permits us to order the same amount for a three-pound baby in the same space of time. It is a standard, and if disobeyed you will find that instead of the contents of the jug being in the patient the physician becomes the contents of a "jug." In this State we have to report the purchase of any narcotic drug not only to Washington but to Harrisburg, and if you order more than the man at Harrisburg thinks some one ought to have he writes and tells you so and demands to know why. This law went through backed by so-called "reformers," but in reality because it made so many more political "jobs."

In medical education matters we have standards equally inelastic. Entrance requirements are standardized very properly as to theory and idealism but not as to expediency. A mutton-head may take four years in college and be a very poor medical student, whereas another man with just enough preliminary education to enter may

be a brilliant man. As illustrative of this let me cite the case of a young fellow who graduated with an A.B. from a representative eastern university. After he graduated he decided to study medicine, but he was told that in the course he had taken he was five hours short in biology, and ten hours short in chemistry, and he could not enter any school in the State. He asked if he might make up those hours by extra or double extra work in his first year. "No." He asked if he might make them up by working all summer and quadrupling the hours, and was told "No." He then said that as he understood it if he went to college for another year and made up fifteen delinquent hours but loafed all the rest of the time that he supposed he could begin the study of medicine after the lapse of 365 days, and was told "Yes." Here is a standard that works for nonsense. This man came of a long line of intellectual forebears, and 80 per cent of the class he would have entered did not have half his training.

Furthermore, each State has its own requirements which may markedly differentiate it from the next State. Some require a knowledge of French and German. Many men in this country speak German by birth. If such knowledge is used as a guarantee of culture, it is fictitious. If it is desirable from the sandpoint of being essential in the equipment of good physicians it is equally fictitious. Many other departments of study are far more useful as preliminary to medical education. How many here to-day depend on French or German to be well trained practitioners?

All schools must use so many hours for so many things regardless of the fact that one teacher may be able to impart as much knowledge in five hours as another one in twenty hours, and regardless of the fact that one school has facilities and clinical material for teaching that far excel another, so that in a month a student may learn more than elsewhere in a year.

During the last fifty years the following changes have taken place in the medical curriculum. At first students received purely didactic instruction with no clinics and no laboratory work. Then those who taught purely didactically were displaced by those who thought it best to teach purely clinically; and within the last twenty years the clinicians have been unseated to a great extent by those who emphasize laboratory work. As with so many other problems the right way lies in a middle ground, for all these plans should be followed. The trouble is that to-day the laboratory plan is in excess chiefly for two reasons, namely, that the pursuit of research holds the promise of more advanced knowledge, and, second, because the laboratory man has the time and the enthusiasm to push his claims for recognition as an undergraduate teacher to the utmost. Now the point I wish to make at the present moment is that the laboratory teaching for the undergraduate is greatly in excess, not conducive to the production of good physicians and surgeons and crowds out as to hours and as to thoughts and ideas what the man who is to be a practitioner ought to have as fundamental necessities. Laboratory teaching should be only fundamental and elementary, and real experimental work, except that which is done under the guidance of an instructor to illustrate or impress a salient fact, should be reserved for post-graduate endeavor. This is true for several reasons:

1. Not one student in a hundred does laboratory work after graduation. I mean as to research.

2. Not much more than one in a hundred is fitted by natural ability to do research laboratory work.

3. It is impossible to make a man, even if he has laboratory ability, an efficient laboratory man in a period of a few weeks in any undergraduate year even if his whole time is given up to it, which ought not to be done and cannot be done.

4. These laboratory courses do not fit him for treating the sick and rob him of time which should be devoted to bedside work.

Another error is the belief that laboratory research can immediately reveal all things. A single research may be said to rarely reveal in its finality anything. I pre-

sume that most of my hearers still harbor in their minds the idea that iron is a useful drug in secondary anemia. Within a year a research has been published by a very reputable man from which he positively concludes it does no good. So, too, in another paper, we have recently been informed that the salicylates are proved to have none of the effects heretofore imagined and, therefore, the natural deduction is that in using them we are imaginative optimists, but the overwhelming testimony of the profession in its literature forces the author to admit that while he has knocked out all our ideas of how they act and has to admit that they do good he cannot tell why, for, according to his results, they have no right to do good. But these researches are nevertheless of value. They prevent us from becoming set in our ways and self-satisfied; they stimulate other men to solve the problem presented; taken in groups or analyzed after they have accumulated in mass they often lead to correct conclusions, but if they are carried out by quarter-trained men they lead us nowhere. Too often with the spirit of research which may be accurate in detail but wrong in deduction the investigator, with a courage worthy of a better cause, tells us we are hopelessly wrong and the next man tells us we are hopefully right. This is not the mental state to be developed in the embryonal mind of the student.

The endeavor in laboratory work for the undergraduate should be to give only that which the man will need in actual practice.

The endeavor to make undergraduates thorough laboratory technicians is a mistake.

The result is that the student leaves his college in a state in which he is neither a good bedside man nor a good laboratory man.

To put the matter in another way the teaching of laboratory technique to excess takes him away from accepted fundamentals and puts him in a state of arrested development amongst those who because they are pioneers and investigators are types of the highest development.

When does the tactus eruditus develop in this lad? He has not been taught to think. He has not even been taught to carefully pack his brain, but things have been thrown into it in a jumbled mass. He is like a person in a merry-go-round, dazzled and confused by a mass of glittering surfaces with no conception of the significance of any of them. He finds he is weak at the bedside and flies to the laboratory for help, or he finds he is weak in the laboratory and turns to "detail men" for help. As President Hadley recently said in *Harper's Magazine:*

> Nine people out of ten believe that the way to train a boy to think is to impart as much knowledge to him as possible. They do not distinguish between the possession of information and the power or habit of thought; or at any rate, they assume that if you can secure the former the latter follows as a matter of course.
>
> In no other field of life do we meet this confusion. No sensible man could think that the way to train a boy to ride is to give him as many horses as possible, or that if you could secure the necessary horses the riding would follow as a matter of course. And yet this way of looking at things would be as near the truth about riding as it is about thinking.

At a recent examination before a licensing board several men could interpret an electrocardiographic record but could not make the diagnosis of a mitral stenosis when told to listen to the patient. A young fellow could do a metabolism test but did not know where the dorsalis pedis artery was when told to palpate it. An undergraduate told the difference between a paralytic and concomitant squint and could not write a prescription for a man with diarrhea. Another thought a leucocyte count would tell him more about a possible appendicitis than his hand could tell him when placed on the right lower quadrant.

The time has come in medical education when we must not confuse so-called knowledge with wisdom, when we must teach men to think, not to cram facts, when the medical course should revert to some degree at least to the idea of the original seven fundamental chairs with the adequate assistance of a well-trained corps of men

under them, when we should forbid the study of specialties until a man has had a thorough course in medicine, general surgery, obstetrics, therapeutics, pathology, anatomy, physiology and chemistry, and after his hospital training be fitted for specialization if he so decides.

The placing of advanced technical laboratory courses and the teaching of the specialties in postgraduate years does not minimize their importance but magnifies it. It teaches insiders and outsiders that such work deserves extra time, extra effort and peculiar ability, often natural, rarely acquired. Too many think they are true technicians or real specialists. The latter think only of ears as ears, eyes as eyes, and hearts as hearts, forgetting that each organ is a part of a whole body and that it may even produce changes in the whole body, or that the rest of the body may cause changes in it.

The question of the training of nurses also deserves consideration. Many physicians believe, and rightly, that the present demands of the trained nurse as to pay and hours are excessive and beyond reason, and further that by various rules of their organizations, and laws passed through their efforts, standards have been set up which are extreme and keep out of training many capable women.

On the other hand there is much reason in the demands of the woman who is permitted to append the letters R.N. to her name. In many instances she must be a high-school graduate before she is admitted to a training school. This means a period of self-maintenance, or maintenance by parents, that is an unproductive period so far as financial reurns are concerned. Then she is forced to spend full three years in the hospital, where she works hard, studies hard, and is required to store her mind with many things far beyond her future sphere of usefulness. If you examine the books for nurses now on the market you will find they deal with fairly advanced bacteriology, embryology, minute anatomy even to the extent of stating the different kinds of epithelium lining different parts of the alimentary canal, chemistry, physiology, materia medica, and other subjects. On these topics she is examined by the staff if she is to graduate and then is asked questions by a State board of examiners along these lines and has to pay a fee for it. During her period of training her pay has been usually very scanty. In other words, she has done a large part of what a medical student has done and a lot of hard manual labor and night work which he has not done.

Manifestly every one to-day, nurses, doctors, and by no means least, patients, are suffering from another attempt at the fixation of things by standards. Laws have been passed which say that a woman shall not announce herself as a trained nurse unless she has reached certain standards, and a condition has resulted which is equivalent to passing a law that every woman who takes care of the sick shall have a highly trained mind. The specious argument is made that no untrained person should be permitted to care for the sick, and then this self-evident fact is extended so that no one except a super-trained woman shall do so. The result is that the laws designed to protect or help the sick defeat their purpose, for the number of sick who can afford to pay a nurse $35 to $45 a week and pay her board and washing is very limited, and, if the patient is very sick, can still less afford to pay for three nurses on eight-hour shifts, or even two on twelve-hour shifts. No vocation in life can be run on such a basis, much less one cloaked with service to humanity.

Attempts have even been made to have laws passed to the effect that nurses shall be allowed to work only eight hours. We have, therefore, in this matter of nursing another instance of the abuse of standards. The remedy undoubtedly lies in meeting demand as in all branches of business. Certain well qualified women of high mental capacity should be trained to be supernurses so that they could supervise the preparation of a surgical clinic, prepare

ligatures, make certain tests, and carry out, or prepare to carry out, laboratory tests. But the great mass of women who possess enough tact and ability to nurse the sick never need such training and never use it.

The woman of good intelligence who has passed one year in the wards of an active hospital is perfectly qualified to nurse every case of typhoid fever or pneumonia that any of us see. Furthermore, she is qualified to look after the majority of surgical cases unless the surgeon has no assistants or is so busy that he does not do the dressings himself. Special training may be needed for a nurse in a bronchoscopic clinic or in an eye clinic, or ear clinic, but this could readily be given in an additional postgraduate course of a few weeks. To use a somewhat crude simile, at the present time we might as well say that no man shall be employed as a clerk in a store or a bank unless he shall first have passed three years with practically no pay but hard labor in a clerking school. It is entirely correct to have certified public accountants, but it is recognized that such training is utterly absurd for ordinary clerks or salesmen.

If my thought is to be formulated, the letters R.N. would mean that the individual is a highly trained, extra-trained woman. Or that such a nurse be identified with the letters S.R.N., the "S." meaning "Special." Now all of them, good, bad, or indifferent, have the same designation, and many of them capable of passing an excellent but difficult written examination are not as well qualified to deal with a sick person as a woman who has tact, gentleness and certain essential personal qualities even if she has no training at all. The mystic symbol R.N. means no more to you or to me when we seek a nurse for a given case than would the letters X, Y, Z, for in nursing, even more than in the practice of medicine, the personal attributes of the nurse are the chief factor, for she lives with the patient and can make his or her illness as happy as possible or as unhappy as possible. I have had an untrained woman take the pulse, respirations and do all necessary things with the utmost satisfaction to patient, family, and myself, and I have had a trained woman upset the whole *ménage* to such an extent that the patient lay awake all night, so did the father and mother, and the servants rebelled, so that she was a curse instead of a benediction. The result was that the whole household sang "Praise God from Whom all Blessings Flow" when she was dismissed. These faults were not due to "training," except her mistaken feeling that as she was "trained" she was a superior person. The letters R.N. simply indicated that while she had passed the State board the one thing it had failed to test as to her fitness was common sense. We ought to have nurses trained one year, and licensed if you will, others trained two years, and still others trained possibly five years for some special service, and we ought to insist on this not for our own sake but for the sake of hosts of sick people who now go without a nurse just as they go without other high priced luxuries.

I repeat that to expect a woman to put in three years of hard physical work and study and ask her to take what is small pay in view of these efforts is unjust. It is right and proper, however, that a woman should be taught to be useful in the sickroom by a brief course and receive less pay than her highly trained sister, and this is what the demand should be, unless we are going to standardize cooks, butlers, clerks, clergymen, lawyers, actors, car conductors, etc.

As a matter of fact the human being that needs to be "standardized" most, is "standardized" least and never will be "standardized" for obvious reasons, namely, *legislators.* When we can standardize legislators and reformers the day will have arrived when in the words of scripture "There will be no crying, neither will there be any more pain."

If not detaining you too long, we come to the medical man after graduation.

We have the statement, publicly made, that it is essential the standard of the general practitioner shall be raised, thereby intimating to the public that it needs to be raised. On the basis that it's wise for all

men to try to be better and do better this is, of course, true, but my experience with the general practitioner as a class is that he is capable of doing all the "raising" that is needed without missionary effort on the part of professional uplifters. Give him chances, as this gathering in Philadelphia gives him a chance, and see how he grasps them. He will set his own standard and he properly resents any intimation that he needs standardization. Some of those who for various reasons have attained special skill in one line would be hopelessly at sea in general practice. I know some surgeons who could treat a case of pneumonia about as skilfully as I could do a cholecystectomy. I make the bold assertion that there are proportionately as many specialists who need standardization as there are general practitioners.

Personally, I never meet a man doing general work that I do not feel that while I may know more about one or two things than he does, he knows more, and is able to do more, about a dozen things, than I am, and I wonder if I have been standardized up or standardized down.

Let me ask the question as to whether some enthusiastic persons are not by their zeal doing more harm than good. Are they not giving the laity the idea that our profession needs standardization in the sense of being better instead of giving opportunities to those in their own ranks? Is it not true that the children of this world are wiser than the children of light in that we never hear a quack or a chiropractor or osteopath publicly state that their guild must be improved? Why should we not tell, if we must tell, of the good, and deal quietly within ourselves with the bad, for all human nature is occasionally bad?

Methods and standards differ widely in our land by force of circumstances, and one form of practice is fitted for one place and another for another. Thus group practice is practically unknown in Philadelphia as such, but is customary in other places. The subject is too large for thorough discussion, but is it not true that by it medical men deliberately throw away a valuable thing?

Conditions differ so in various areas, as I have already said, that only general remarks may be made about this plan, but is it not a tendency toward the department store type of medical practice? Does it not tend to destroy that close and intimate relationship between doctor and patient that means so much to both? Does it not act as an aid to the osteopath, chiropath or any other kind of "path" whose essential characteristic is close contact with the patient? Can you imagine that osteopaths would have group practice in which one individual would pull a leg, another an arm, and another a hand? No, I repeat, "the children of this world are wiser than the children of light." They know full well the value of personal interest and attention and even teach students how to handle people mentally as well as physically, with commercial courses in addition.

Does group practice help professional solidarity? I doubt it because those who are not in groups, or, as they say in Washington, do not join "blocs," feel ostracized by combinations, and again because it is almost inevitable that the members of a so-called group will vary in their ability to hold people as patients and so, before long, those who know more than their colleagues may get little of the earnings, while others who know less about how to produce a pleasant professional effect get most of it. One man who had erected a fair-sized private hospital for group practice in a Western city told me frankly that he had more trouble with his medical group than he had with his nursing and servant group, and that by the time the day was over, what with adjusting the difficulties and peculiarities of the combination, he did not know whether he was running a hospital, a psychopathic asylum, or an opera troupe made up of what the impresarios call "temperaments."

It may be argued that after a man has passed through a group, and if he does not pass through some one in the group will be a loser, that everything about his case has

been discovered. On the contrary, if a medical man or surgeon needs the aid of another man in a difficult case it is easy to obtain it with no suspicion that one is standing in with another.

If medicine could be divorced from inevitable empiricism and made an absolute science, if human beings were one and all alike mentally and physically, then group medicine would meet the need because the patient could be put in the hopper, pass through various stages of manipulation, investigation, and therapy, and come out a finished product. When group practice is developed as it is to such an extent that a woman sits in a receiving room, takes the patient's name, finds out what is the matter, in her opinion, with him or her, and then shunts the patient into office "A," "B," or "C," surely the department store has found its homologue in professional life and the relationship of buyer and seller is established to the "nth" degree.

And now, in closing, let me have a final word. Because I have talked about the dangers and the duties of the hour I would not have it thought that these dangers are so great that they cannot be overcome or that they jeopardize our lives and our fortunes. There will always be factors of salvation as well as factors of destruction, and up to date salvation has usually arrived if somewhat slowly. It will come more quickly and more surely if we as medical men exercise among ourselves those level-headed qualities in worldly affairs that we have to exercise in bedside affairs. That we influence our communities to follow the correct line of thought, that we see that our representatives go to legislatures and conventions instructed wisely as to our affairs and not as individuals knowing little of what we desire. Last but by no means least, that we recognize that no body of men can be joined in the act of healing without a sense of mutual dependence and fraternity, because we find our chief reward in the results which we achieve, in the relief that we can give, and in the hope we can inspire in those who are ill to-day and fear illness to-morrow. Let us not be so unworldly that we are misfits in the great body politic, nor so worldly that we cease to be physicians except in name. Let us in phalanx form crush evil and fight our way in the world as do other folk, but last of all let us recall in our quiet and silent moments those gentle attributes which separate the real man from the lower type. Let us bear in mind and let the world know by conduct, but not by speech, that the quotation so dear to Trudeau at Saranac in his struggle with disease is equally potent with us to-day. It is "to cure sometimes, to alleviate often, to comfort always." Then when the end comes we will agree with Robert Louis Stevenson that "it is better to travel happily than to arrive," and like William Osler, decide as he did in his Ingersoll Lecture on "Immortality," that we belong not to the Laodiceans or the Gallionians but to the Teresians, for the former are distraught while the Teresians are content; and say what the cynic will, it is the Teresians who have in the face of fire and sword, plague, pestilence and famine always been the lantern-bearers leading men to discoveries, victories, and completed endeavor.

Purpura Treated by Injection of Human Blood.

Dixon, in the *British Medical Journal* of January 6, 1923, states that the unfailing success of the treatment of hemorrhage of the new-born by injection of parental blood suggested to him the use of the same method in purpura. The result has been most encouraging, and he ventures to hope that in this method of treatment, applied at the very onset of the disease, we have a sure way of curing.

He has injected 2 to 5 cc of blood, taken from the brachial cephalic vein, into the gluteal muscles. Clotting is prevented by sterilizing the syringe and needle in a solution of magnesium sulphate. He has used the method in four cases, with gratifying results in all, and in the very early cases with complete abortion of the attack.

Editorial

IS THERE DANGER IN THE FREE ADMINISTRATION OF ALKALIES FOR GASTRIC ULCER?

Our readers are fully aware that two divergent schools exist as to the treatment of gastric ulcer. One is represented by what might be called radical surgery; the other by conservative medicine. The radical surgeon asserts that the conservative medical man can never show with absolute certainty that an ulcer has healed under his methods of treatment. He claims that there may be periods of quiescence and comfort, but that the lesion is always present, and again he asserts that as years go by there is a strong probability that the ulcer will undergo malignant change, and, therefore, when operation is finally forced conditions are found which are much more grave than had operative interference been resorted to in the first place. In opposition to this view, the conservative medical man points out that operations for gastric ulcer have in themselves had a certain mortality rate, that while the ulcer may be eradicated or removed, or undergo healing because a short circuit has been produced which relieves it of irritation, nevertheless the patient suffers from pains and discomfort arising from adhesions, so that in some instances he is really more unhappy than he was while suffering from the ulcer.

There is a good deal of truth in this assertion, and for the additional reason that patients are exceedingly loath to submit to the knife, so that the various plans which have been advocated by Lenhartz, Sippy, and others have been eagerly followed, the more so as, without doubt, in a large number of cases the relief which is induced is so great that both the physician and the patient are content with the results and willing to take a chance that absolute healing has not occurred and that malignant degeneration may not ensue in years to come.

It will be recalled that in the Sippy method the very free administration of alkalies is resorted to, Sippy stating that sometimes as much as thirty grains of calcium carbonate and sodium bicarbonate are given every hour midway between feedings and every half-hour after the last feeding until 9 P.M. to control free acidity.

It is stated by those who are opposed to this plan that even such doses do not always succeed, but more important still, Hardt and Rivers have recently put forward the view that these doses are in themselves harmful to the general economy. They point out that such patients develop a great distaste for milk, that they suffer from headache and sometimes from vomiting, and they raise the interesting question in the *Archives of Internal Medicine* as to why these symptoms should develop. They claim that a definite toxemia associated with renal changes, increased blood urea, and sometimes a state of hyperacidity is induced, and therefore, as we have stated before, that the method is by no means as innocuous as it has been thought to be.

The question which arises at this point is as to whether these symptoms are not due to the too free use of the calcium salt rather than to the free use of the bicarbonate of sodium. Both potassium and calcium are potent agents in the body.

Many years ago Sydney Ringer of London stumbled over the powerful influence of calcium upon the heart muscle when using tap water in investigations upon the frog's heart, and in the celebrated Ringer's solution, now so largely employed under the name of normal saline, calcium is included in minute quantity to counteract the depressant effect of potassium.

The substance of the matter in this instance would seem to be very much as it is in most plans of treatment, namely, that a method which succeeds in one group of cases may fail in another, either because it does not succeed in meeting the conditions which are to be opposed or because it engenders conditions which are undesirable.

To sum the matter up, therefore, it may

be stated as a fact that there are certain cases of gastric and duodenal ulcer which should be treated by no other means than those which are surgical, and that there are others which are best treated by those which are generally considered medical; meaning by this, regulation of the diet, in some cases by starvation in the early days of treatment, as in Lenhartz's method, and in most cases by the free administration of alkalies, the probability being that under these circumstances a careful watch should be kept that the calcium is not used to such an extent as to produce deleterious effects.

THE TREATMENT OF ACUTE NEPHRITIS.

It is well for the physician when a case of acute nephritis comes under his observation to call to mind his knowledge of pathological anatomy and to picture to himself the state of the uriniferous tubules and glomeruli when an acute diffuse inflammation of these organs is present. If he does not do this, in his anxiety to do good, he may do harm by the administration of drugs designed to increase urinary secretion because it would appear on superficial observation that a scanty urine is bound to be followed by evil results. As a matter of fact, however, in the majority of instances, if not in all, the administration of drugs is contraindicated. Drugs, with almost no exception, are eliminated largely by the kidneys, and their administration, therefore, calls upon inflamed and incompetent organs to do more work at a time when they should be given rest. The use of active renal stimulants, such as sodio-salicylate of theobromine, theocine or caffeine only adds irritation to an inflammation already present, and the very common custom of administering fairly full doses of the potash salts is also an error, because it has been shown that such kidneys are unable to eliminate the potash, which, therefore, accumulates in the body and produces circulatory depression, or, if pushed too far, may actually induce an anasarca, which is not to be regarded as due directly to the condition of the kidneys, but is dependent upon the fact that the body is bound to maintain the normal tonicity of its saline content and retains water in its tissues to keep the tonicity at nine-tenths of one per cent. In other words, under these circumstances, the body in producing anasarca is carrying out an effort to protect itself.

Most of the statements which have just been made apply to another group of cases in which acute inflammation is superimposed upon a chronic parenchymatous or chronic interstitial nephritis. Such patients may be maintaining full health, although a large proportion of each kidney is diseased, because the kidneys are capable of doing double work, or to express it differently, a man can live with only one kidney if it is healthy. When an acute infection is superimposed upon the chronic process the remaining portions of the kidney which have been competent also fail, and the only hope is that they may recover soon enough to permit reëstablishment of function.

So, too, in both types of these cases, it is very questionable whether the common practice of the free administration of water is wise, since the condition of the kidney is such that the passage of water through these organs, except in small amount, is impossible, and if it is taken freely and not eliminated, trouble, of course, ensues.

The reader will probably say at once that this line of advice takes from him all measures of providing relief without making any suggestions as to what can be done, and this point of view is to a large extent correct, since we are forced to admit our impotence to a large degree.

Rest in bed, whereby tissue break-down is minimized to the greatest possible extent and whereby the activity of the skin is maintained in eliminating the fluid, the use of a diet devoid of purin bodies and largely made up of starch, aided in digestion by taka-diastase, and in some cases the application of dry cups over the kidneys, may be resorted to with the assurance that they can do no harm, and that there is a strong

probability of their doing very considerable good.

In many, if not all, of these cases the proposition resolves itself into a statement that if the patient lives long enough he will get well, which proposition seems to be a paradox, but which is in reality correct, since if he can survive the acute condition and sufficient time elapse for the reëstablishment of kidney function, recovery will take place.

Our attention has been particularly called to this matter by a recent article in which the administration of citrate of potash is urged. With this view we are not in accord. So, too, some have gone so far as to recommend the administration of vaccines, autogenous or otherwise. Here again we strongly oppose this practice. Vaccines, if given in adequate dose, always produce a temporary negative phase of vital resistance before their beneficial effects can be exercised, and, furthermore, by their use we are introducing into the body poisons which, while they may induce the development of amboceptors, will nevertheless have to be destroyed by oxidation or elimination.

A certain number of cases of acute nephritis arise as a complication of more or less severe tonsillitis. Here again the question has arisen as to whether under these circumstances the tonsils should be removed, with the thought that a continuing focus of infection will be abated. This is an instance in which tonsillectomy should undoubtedly be done, if done at all, under local anesthesia rather than by the use of a general anesthetic.

Our readers will remember that in the March issue of the THERAPEUTIC GAZETTE we published a symposium upon tonsillectomy, and that in this symposium, amongst other things, the question was taken up as to whether the tonsils should be removed during acute inflammatory processes in them or during the progress of a general acute infection, and that the general opinion expressed was that, except in peculiar cases, operative procedures should wait until the acute illness had subsided.

There are some cases of primary nephritis, acute, or inflammation superimposed on a chronic condition already present, which are not due to infection, but to the development of some exogenous or endogenous poison which irritates these organs. We are unable to see that the treatment under these circumstances should be any different from that which has already been discussed.

THERAPEUTIC PNEUMOTHORAX.

Therapeutic pneumothorax has now become a recognized procedure in the treatment of advanced pulmonary tuberculosis, with or without hemorrhage, producing its best results in those cases in which only one lung is involved rather than in those which suffer from severe hemoptysis, being distinctly limited, however, in its application by the degree of bilateral involvement and the presence of adhesions.

It is a radical method of treatment and should not be resorted to without the employment of apparatus which will give the physician a true conception of the intrathoracic pressure which he is inducing. On the other hand, Singer, writing in the *American Journal of the Medical Sciences,* goes so far as to state that pneumothorax can be done in the physician's office, provided one has the apparatus for proper *x*-ray examinations and the sterilization of instruments, claiming that most patients can take the pneumothorax sitting on a chair or a stool, and are able to leave within a few minutes after the operation, the entire treatment usually being accomplished in ten minutes.

It having been established that this method is of value in the conditions which we have named, the question naturally arises as to whether it can be employed in other pathological states involving the respiratory organs. In answer to this question, Singer asserts that it is indicated in severe bronchiectasis, abscess of the lung, and in instances in which empyema is draining into a bronchus, claiming that in severe

bronchiectasis it is simply marvelous to see the improvement following the collapse of the lung. Those patients who have been bringing up purulent sputum, from four ounces to a pint a day, and who have found it impossible to lie down in bed, will, after the second injection, have little or no sputum and be able to lie down in any position. Of course here again the presence of dense adhesions which prevent pulmonary collapse would prevent this method from being of value. When an empyema is draining through a bronchial fistula not only is rest of the involved part obtained, but Singer claims that the pressure of the air forces the pus through the bronchus and thus increases the rapidity of drainage.

Singer also points out that when that seriously dangerous condition of acute pneumothorax develops, dangerous because of the violence of its onset rather than because air has gained access to the pleural cavity, the injecting apparatus which is ordinarily used for the induction of therapeutic pneumothorax may, by reversal, be employed to draw off air and thereby give the patient relief from the intrathoracic pressure which has developed so suddenly and is so great that the mediastinal and other tissues cannot adjust themselves.

SURGICAL INTERFERENCE FOR ANGINA PECTORIS.

Readers of French medical literature will recall that on more than one occasion Jonnescu has reported to the *Bulletin of the Academy of Medicine of Paris* and to *La Presse Médicale* the successful results achieved in obstinate cases of angina pectoris by section of the left cervical sympathetic under local anesthesia.

When these reports appeared we at first intended to call our readers' attention to them, but afterwards concluded that it would be best to wait until other surgeons had confirmed Jonnescu's observations by experiences of their own. We are, therefore, interested in a report by Coffey and Brown, surgeon and physician, of San Francisco, in the *Archives of Internal Medicine*, in which they discuss quite exhaustively this important topic, describing to a limited extent the literature of angina and giving in detail the preoperative and postoperative condition of five patients so treated. For the details of the operation itself we must refer the reader to the original paper. It suffices to state that out of five cases marked improvement occurred in four, and that these authors believe that because of the obstinacy and painful character of the symptom angina pectoris, they and other clinicians will be justified in resorting to this procedure in other cases. They do not consider that the operation itself is an easy one, but on the other hand they point out that section of the cervical sympathetic is in itself not accompanied by anything but a very moderate mortality if that. The operation, of course, must be largely palliative rather than curative in its results, since many cases of angina if not due to are certainly associated with syphilitic or senile changes in the walls of the aorta and coronary vessels. On the other hand there can be no doubt that where sympathetic fibers are sectioned in the thigh such a radical change sometimes occurs in the circulation as to be little less than miraculous, as, for example, in those cases of angeitis obliterans associated with great pain in the feet, and often ulceration, in which operation upon the sympathetic fibers in the vessel's sheath sometimes produces results which are extraordinary in the way of relief.

Coffey and Brown state that marked coronary changes are usually found at autopsy in these cases, and quote the opinion of Allbutt and Franck, that death is due to cardiac inhibition induced, according to Allbutt, chiefly through the pneumogastric and stimulated by the pain of aortic spasm, while Franck expresses the belief that the cervical sympathetic acts as a constrictor and dilator of the aorta and its immediate branches.

In this connection it is interesting to remember that in animals it is not possible to produce permanent cardiac arrest by

irritation of the vagus. It is, however, conceivable that where degenerative changes have taken place in the heart muscle and its blood supply is materially modified by coronary disease, such inhibitory influences might produce grave results.

The main point of importance from this report of Coffey and Brown lies in the fact that the operation is not one which can be done by a novice, and that if it is widely favored even by those who are most skilful it will probably have a high mortality rate, since many of these patients die suddenly and unexpectedly when exposed to little or no shock, and for this reason accidents during operation may readily occur which may be attributed to the interference when in reality it is only a coincidence.

ALLEVIATION OF PAIN IN SEVERE AND FATAL ILLNESS.

Incident to National and State laws bearing upon the abuse and limiting the use of narcotics, there has been a noticeable diminution in the quantity of these drugs dispensed even through the agencies empowered by law to sell. Thus in the last four years there has been sixty per cent reduction in the total quantity of narcotics used in Pennsylvania. Incidental to this there has been a steady and progressive diminution in the number of addicts.

Perhaps because the wreckage made by narcotic addiction is particularly common in the medical profession, some form of opium as a rule being used, there is a widespread belief that the use of morphine and its pain-killing allies, even for the relief of pain, should be carefully guarded lest a habit difficult or impossible to break may result. Wise supervision over the administration of narcotics and anodynes is desirable, but such timidity in their use as to rob them of their beneficent effects has caused a world of avoidable suffering.

Incident to the fact that opium and its derivatives, given in full doses, are toxic, the tendency of the profession at large is to give an absolutely safe dose. It is often not one that will attain the object desired in the suppression or abolition of pain. Severe pain is in itself shocking; it may be lethal; continued for hours and days it devitalizes. When due either to a cause which may be shortly remedied, or to a cause which never can be remedied, some pain-killing medicine should be given, and in such doses as to control the pain. The dose is not a quarter to half a grain, or a grain; it is enough, under supervision, to give the patient comfort. The last months of thousands of people condemned to die within a short period of an incurable and agonizing malady such, for instance, as cancer, can be made bearable and comfortable if the principle of giving morphine in sufficient quantity to completely control the pain is adopted. It rarely is administered in sufficiently full doses to keep the patient comfortable, the physician and nurse stopping in fright if more than two or three grains are required.

Corning *(New York Medical Journal,* Dec. 20, 1922) writing on the subject of alleviation of severe and fatal illness says: "I venture to deprecate the practice of reducing the doses of opium derivatives as the subject of a painful and incurable disease nears the fatal climax. This is done with the idea of prolonging life to the ultimate minute, and in complete forgetfulness of the fact that extreme suffering is quite as capable of hastening the demise of the patient already hopelessly enfeebled as the cardiac depression wrought by large doses of morphine.

"The better, the more humane, and the scientific procedure no less, is to continue the stimulation of the heart and the administration of the analgesic, augmenting the dose of the latter, should this be necessary, and increasing that of the former as much as may be.

"By going forward in this way the period preceding death may be rendered relatively painless, and the practitioner, secure in the consciousness that he has exhausted the resources of his art, will have placed himself beyond the haunting sense of duty unfulfilled."

PRODUCTION OF CANCER BY SPECIFIC FORMS OF IRRITATION.

The tragic death of practically all the pioneers in *x*-ray work, and from cancer, has been a striking demonstration to the profession and to the laity of the fact that this malignant disease may be produced, indeed is almost inevitably produced, by *x*-ray irritation, particularly that which is at first severe, and is later followed by many repetitions.

In practically all countries of the civilized world intensive researches are being conducted, having for their end the discovery of the underlying cause of that unregulated, invasive destructive cell mitosis, termed cancer. To the casual reader the results of this work have seemed disappointing, but that they are not entirely so is shown by a number of articles appearing in the *British Medical Journal* of December 9, 1922, by Leitch, Murray, Kennaway, Scott, Legge, Rowntree, and Passey.

It has long been known that chimney-sweeps are subject to an epithelioma, the underlying cause of which has been regarded as a persistent irritation of the skin due to some constituents of the soot with which they became covered in their occupation. It is interesting to note that Passey has been able to isolate from soot a substance not unlike that which Murray has shown to be present in coal tar, and to be capable of producing tumor experimentally if applied over a long period. Rowntree has shown that the *x*-ray cancer is most prone to develop at the point, or at points, which have first been burned by heavy exposure and thereafter stimulated to degenerative changes by many *x*-ray exposures. Indeed he holds that such exposure is needful to the production of *x*-ray cancer, and points out that these lesions are now entirely avoidable by the precautions taken by practically all workers.

Leitch, as a result of laboratory research, supported in sufficient detail by clinical evidence bearing on the development of coal-tar cancer, shows that "some warts will disappear, some will increase for a time and then diminish and disappear, some will increase but still remain simple, and others will go on to malignancy probably as rapidly as if the irritant had continued. We can make three deductions from this: (1) that the production of the cancerous state is not necessarily the result of the action of the irritant on neoplastic, as contrasted with preneoplastic, tissues; (2) that the bias towards malignancy is given to the cells probably during the preneoplastic stage; and (3) that the successful transplantation of a tumor in the histologically doubtful stage is not a sure proof of the malignancy of the tissue at that particular date, seeing that left alone in its natural environment it will tend to declare itself as an epithelioma.

"Such conclusions would be rendered much more certain by observations in cases where the irritant had been suspended before any neoplastic reaction had taken place—that is, during the prodromal period. Cases are known where men have been exposed to the action of soot, paraffin, or aniline products for a length of time and have given up such employment, and yet years afterwards they have developed the particular kind of epithelioma associated with these irritants. These cannot be lightly dismissed as strange coincidences, and they would seem to show that the essential damage to the tissues, finally resulting in malignant proliferation, is done at a comparatively early stage. . . . We may conclude that the neoplastic response to an irritant is a slow tissue reaction that exhibits no defensive property, that subserves no useful function. The internal changes in the cells in the earliest stages may some day be analyzed: at present they are quite unknown. In the skin epithelium we have a tissue which we have been taught to believe is constantly being shed and constantly regenerated, and one would imagine that the damaged cells would soon have been shed, leaving a new and healthy race to take their place. Of course, in man the processes take a much longer time to evolve. In mice we can discover the minimum duration of exposure to a tissue irritant that will be necessary to produce cancers,

and thus form an idea of the length of the latent period before they are evident, and it is possible that this will vary with different agents."

Murray alludes to Fibiger's experiments with the Spiroptera cancer of rats. The specific irritant is introduced by feeding rats with cockroaches carrying the larval nematodes; the cycle is completed by feeding cockroaches with the feces of infected rats. Squamous carcinomata develop upon the tongue and the stomach of the rats in a varying percentage of the animals thus fed. Sarcoma of the liver has been produced by feeding rats with the eggs of the *Tænia crassicollis* from infected cats, about one-half the rats developing the tumors. He notes that coal tar applied to the ears of rabbits, or of mice, causes an external cancer which can be studied from its beginning. He observes that three months is the shortest interval of repeated application before the development of cancer, and sometimes the squamous epithelioma will not develop for eighteen months. Rats and guinea-pigs seem immune. Tar distillers and pitch workers give a history of exposure of from ten to forty years before developing malignant lesions.

Murray found his most active cancer-producing agent in the material from tar secured by successive extraction with water, alcohol, and ether. It is suggested in his researches that cancer produced in one area has an inhibitory effect upon the production of the same lesion in another region of the body.

Leitch notes that "The workers in the refineries who deal with solid paraffin or with the more refined oils are not prone to dermatitis or cutaneous tumors. But whatever the chemistry of the substances may be, we have in crude paraffin oils something that induces neoplasia. The skin cancers that they produce are all of an exactly similar type; they occur on sites unusual for squamous carcinomata unassociated with definite forms of irritation; they are frequently multiple; they are generally preceded or accompanied by warts or other hyperplasias; they are often of a low degree of malignancy; and it takes several years of exposure to the noxious substances before they develop—never less than ten years in the German industry and probably never less than fifteen in the Scottish oil works. Although the patients are usually of middle age or more, it is perhaps more a question of the length of exposure than of the age of the individual. Can we say that the substances under consideration are the actual cause of the epitheliomata? The generally accepted opinion has been to regard them as mediate or predisposing rather than as proximate causes: they bring about such a pathological condition of the skin that the soil is rendered suitable for the operation of some other and hitherto mysterious cause. It is impossible to controvert such an idea. But the success that has attended our efforts to produce cancer experimentally minimizes its cogency. No one doubts that the crude paraffin oil produces chronic as well as acute inflammatory reactions; no one has doubted the fact that it causes hyperplasias of the epithelium and even definite wart formation. Why should one have to premise the intervention of a new factor in the succeeding development of the malignant stage?"

By the frequent application of crude shale oils containing paraffins Leitch produced tumor formations in something less than 50 per cent of the mice which lived for more than a hundred days. He regards only those experimental tumors as malignant in which the epithelial growth has penetrated the panniculus carnosus.

Leitch, in conjunction with Kennaway, quotes Jonathan Hutchinson to the effect that "by the prolonged use of arsenic the nutrition of the skin may be seriously affected, and, amongst other changes, warty or corn-like indurations may be produced, and if the drug be continued these 'arsenic corns' may assume a tendency to grow downwards and pass into epithelial cancer."

In conjunction with Kennaway he conducted an experiment to see whether arsenic might act as a tumor-producing agent. He made repeated local applications of potassium arsenite in alcohol, 0.12-per-cent solution. Of the hundred mice subject to

this experiment one developed a typical epithelioma with metastasis to the lung.

Scott reports on the cancer of paraffin and oil workers of the Scottish shale oil industry, noting that in the paraffin-shed men the lesions are usually upon the hands, arms, forearms, face, neck, and ears, whilst among the oil workers and laborers the lesions are usually on the scrotum. He notes, as a predisposing cause, the long period of service before the development of cancer.

Legge calls attention to the fact that in 1920 epitheliomatous ulceration and chronic ulceration contracted in the factory workshop were made reportable. In this year 89 cases were reported, 20 of whom were of previous record.

Passey succeeded in producing cancer experimentally. He states that "It would seem that this is the first time that cancer has been produced experimentally by means of soot, and possibly the lack of success in the past was due to (1) its application in a form which had not much chance of long contact with the tissues and of penetration; (2) an insufficient length of time over which the inoculum was applied; (3) a choice of unsuitable animals; or (4) an unsuitable sample of soot. In connection with this last, Ross has shown that soot, as pitch, derived from the more bituminous coals is much the most active."

It is abundantly proven that cancer may be caused by a variety of irritants continued over a long period of time. It is suggested that many other forms of chronic irritation may produce like results. It is proven that even when the irritation is removed and the lesion produced by it has apparently disappeared, cancer may develop long after at this site. The practical application of this knowledge in the line of prevention is obvious.

Progress in Therapeutics

Medical Therapeutics

Spinal Analgesia.

PORTER, in the *Indian Medical Gazette* for January, 1923, states that he has lately read several articles on this subject and has noted that one of the greatest objections to this plan is the initial fall of blood-pressure which may be produced by the drug itself (stovaine).

It is common to find within three minutes after injection that the face becomes very pale and the pulse soft and feeble. Vomiting may also ensue. There appears to be no doubt that this drug (and probably all substitutes) causes dilatation of the blood-vessels, and considering that the abdominal vessels can hold all the blood in the body, such dilatation may cause alarming symptoms or even death in old and feeble patients. He, therefore, thinks it advisable to inject 10 minims of adrenalin intramuscularly about three minutes before introducing the spinal injection. This is on the same principle that many have for years adopted, the plan of giving adrenalin before injecting any of the preparations of salvarsan. By the time that the latter drug reaches the brain, the adrenalin has caused contraction of the cerebral vessels and so defeats the dilating effects which he thinks salvarsan undoubtedly has.

Although he has used spinal analgesia for the past eleven years to the practical exclusion of general anesthetics, he has not yet had a sufficient number of cases to enable him to say whether this preliminary injection of adrenalin has had the effect one supposes it to have, but he has recently operated on two or three men whose condition was extremely bad and they stood

the operation remarkably well. There is no doubt that a preliminary injection of morphine and hyoscine must be given if one is to eliminate the possibility of shock taking effect through the special senses.

One of his nurses told him that she had seen a number of operations performed under spinal analgesia in a large provincial hospital in England and that all the patients got shock. She said, however, that none of them had been given a preliminary injection of morphine and hyoscine, and they were naturally acutely conscious of what was taking place.

Even the most courageous patient must suffer from shock under these circumstances. These remarks apply also to cases which are to have general anesthesia, and there is no doubt as to the value of a large dose of morphine in those which are to be operated on under local anesthesia.

He invariably removes the breast by Halstead's method practically entirely under local analgesia, assisted by heroic doses of morphine and hyoscine.

The diffusion of stovaine-glucose is rapidly completed, and Porter asserts there is no danger in putting a patient in the Trendelenburg position soon after the injection. He prefers to open the abdomen first and then raise the pelvis if necessary. He thinks it is a great pity that this method of analgesia is not taught and practiced in all the medical schools and affiliated hospitals, especially when one knows what can be done with it in isolated places by surgeons who have no competent anesthetist.

Roentgen Ray and Radium Therapy in the Treatment of Pathologic Tonsils.

LANE, in *Minnesota Medicine* for February, 1923, states that for more than fifteen years it has been known that the Roentgen ray has a very definite destroying action on lymph tissue. Animal experimentation has conclusively shown that with proper exposure it is possible to practically remove all lymph tissue without producing any changes in other organs or tissues.

The tonsils, as previously stated, are largely composed of lymph follicles. This fact led Witherbee, then with the Rockefeller Institute, to try the effect of the Roentgen ray on hypertrophied tonsils and infected lymph tissue of the nasopharynx. Since reporting his first series of cases he has treated more than 500 patients with excellent results, and no unfavorable symptoms. The results have been most gratifying in chorea, rheumatism, and cardiac cases, types which have not so easily been helped by tonsillectomy. Hermann and others who have had considerable experience with this method have likewise been able to verify Witherbee's results, especially in the cardiac, choreic, and malnourished patients.

Hickey of Detroit tried this method with diphtheria carriers and had 80 per cent of cures, many of the patients becoming free of the bacilli with one treatment and within four days of its application. Kahn of Toledo in a private communication states he has treated 200 carriers for the Toledo Board of Health, 152 of whom could be traced and recultured at least ninety days after treatment. Seventy per cent of the 152 showed a cure, and 72 per cent of the total number became free of the bacilli with one treatment. Only one patient required as many as four treatments. All the cases showing relapse were negative for virulency.

The question arises, will the method be permanent? That it will be so in a large number of the cases if sufficiently carried out is very clearly shown by the work of Price, who selected forty-eight cases of cervical adenitis, tuberculous or otherwise. Some of the patients had been treated and observed as many as twelve years. Twenty-nine, or 62 per cent, showed normal throats and gave no history of any throat trouble since the treatment of the glands, whereas nearly all had trouble previously. Eight, or 16 per cent, showed slight tonsil disease but no symptoms,

making a total of 78 per cent symptomless, while the remaining eleven, or 22 per cent, showed definite tonsil or adenoid disease. It should be remembered results were obtained with treatment directed to the adenitis only.

Lafferty and Phillips examined a series four to six years after treatment and found the patients remarkably free from throat pathology. Van Allen was able to show 80 per cent of fifty patients without further attacks of sore throat and the tonsils ceased to be a menace. These cases were followed for three years. Likewise we could quote many others. This surely is fully equal to any results obtained with operative means.

Simpson, Wells, Williams, Osgood and others report excellent and striking results with radium in tonsil therapy. While the writer's results with radium are too early in most cases to decide definitely, the results so far look better than with the *x*-ray alone. The shortness of time required for treatment and the ease of application make this method an advantageous one. There is no hemorrhage, no loss of time, and not the slightest discomfort afterward. That the Roentgen ray and radium are harmless if properly applied is shown by the reports of a large number of tuberculous gland cases treated throughout the world. Review of the literature does not reveal a single untoward effect of the Roentgen ray on the thyroid, parathyroid, pituitary, parotid or other adjacent tissue with this form of therapy.

During the year ending September 30, 1922, Lane has had under treatment and followed up fifty-two patients treated with Roentgen ray and twenty-four treated with radium or both combined. He has made bacteriological studies of many of these patients and has found a decided lessening of the number of bacteria; in several cases the streptococci have been entirely absent as long as ten months after treatment. He makes no claims that it will do away entirely with the bacteria, but he is convinced that the mechanical drainage established through the shrinkage and narrowing of the crypts is beneficial in reducing the bacterial flora of the tonsils and nasopharyngeal tissues.

One patient treated in the second month of pregnancy who had troublesome sore throat and arthritis has remained free from sore throat and arthritis for nearly a year and has a fine healthy babe. In his series there were four cases with notable thyroid enlargement. In all improvement in the size of the thyroid has been noted.

The Rhinological Surgeon's Position in Diseases of the Maxillary Sinus and the Relation of the Antra to Affections of the Other Sinuses.

In the *New York Medical Journal and Medical Record* for January, 1923, Hays states that sometimes the patient complains of pain on one side of the face, of an indefinite nature, and nothing can be seen in the nose. However, when the mucous membranes are properly shrunk with cocaine and adrenalin, it may be possible to determine that there is an occlusion of the normal opening. With the application of such medicines, sometimes the plug in the normal opening will come away, particularly if suction is used at the same time. Suction may be obtained from an electric suction pump or the water suction apparatus. If the former suction is used, very frequently a certain amount of mucopus can be drained out of the sinus and a diagnosis of the condition made in that way. However, sometimes the plug in the normal opening is so tight that it is absolutely necessary to explore the antrum by washing it out. This may be accomplished either by the trocar and cannula or the Lichwitz needle.

Hays has never seen any harm done by an exploratory puncture of the antrum, but he is surprised at the number of times the washings are negative. He is informed by a number of rhinologists that there is hardly a day when they do not feel justified in washing out the antrum in at least two or three cases. Considering that his

practice is as large as many of theirs, it is a surprising fact that he finds it unnecessary to wash out the antrum, perhaps, more than once or twice a week. Where actual, acute symptoms are present, there may be only an inflamed mucous membrane, and in such instances exploratory puncture will relieve this tension within the antral cavity, which in itself may be enough to allow the symptoms to subside. One may make an exploratory puncture in the thin part of the antrum wall with a Lichwitz needle—a valuable and painless procedure.

However, if one feels that there is something within the antrum which actually needs drainage, it is better to make a large enough opening so that it will remain patent for a few days. This may be done with any of the numerous trocars and cannulæ on the market or may be made with the antrum chisel. It may be possible in some instances that the affection from which the patient is suffering is not due to actual pus within the antrum, but is due to granulation tissue therein. This is more likely to occur in chronic cases. Within recent months, certain instruments similar to the nasopharyngoscope have been devised which can be inserted into the antrum, through a large enough opening, and one may inspect the cavity without any difficulty. However, if one makes an opening of that size, he is in a position to probe the cavity and get an idea of its interior. If the mucous membrane is in a polypoid condition, no amount of interference by the rhinologist will be enough to clear up the condition. It is his opinion that the majority of these cases are associated with dental infections, in one way or another. Therefore, it is frequently necessary to make an exploratory puncture through the alveolar border so that an examination under actual, ocular inspection, of the parts within, may be made. Such an opening does little if any harm, and one is able to view the antral wall and to state exactly whether there is anything there or not. If nothing is found, it is a simple procedure to sew up the mucous membrane again and allow the bone to reform.

From what has just been said, it is often difficult to state just which cases belong to the rhinologist and which to the oral surgeon. He is of the opinion that it is often impossible to tell at one examination who is the proper specialist to take care of the case. Yet one may draw a dividing line as follows: the majority of acute and subacute antral cases belong to the rhinologist, and this includes antral conditions which are associated with affections of the other sinuses. The majority of chronic antral infections which extend over a long period of time should be attended to by the oral surgeon or the dentist; at least, no interference should be attempted by the rhinological surgeon until a definite opinion is given by a specialist in the other field. There is one other point of importance; if granulation tissue has been determined upon as being present in the antrum an opening in the inferior meatus of the nose, with irrigation and drainage, is not sufficient to allow of a thorough cure, mainly for the reason that in the majority of the cases the floor of the antrum is lower than the floor of the nose, and therefore one would have to depend upon getting uphill drainage. This does not mean to say, however, that the rhinological surgeon should not attempt an operation, like the Caldwell-Luc, but Hays feels that, with the more minute accuracy with which the oral surgeon is able to do operations under local anesthesia, such operations belong to him, rather than to the rhinologist.

Ether Intramuscularly for the Relief of Hiccough.

In the *Journal of the American Medical Association* of February 10, 1923, GIBSON states that for the last two years all cases of hiccough coming under his observation, more particularly after operation, have been treated by the intramuscular injection of 25 or 30 minims of ether. Thomas of New York called his attention to its use in children for stopping the paroxysms of whooping-cough, and it occurred to him that it might likewise be useful in the

paroxysms of hiccough. If the original dose is not immediately successful, it is repeated one or more times at several hours' interval. Its administration is not painful and has never been attended with unpleasant consequences.

The first patient on whom he tried it was an elderly and feeble man who, shortly after a gastroenterostomy for pyloric stenosis, developed hiccough of moderate severity but of great persistency. The other time-honored remedies had no effect. After the first administration of ether the hiccough diminished in severity and frequency; the second caused it almost to disappear; and the third was followed by complete cessation.

The method was reported at a meeting of the Practitioners' Society, and from time to time members have reported to him their use of it, with a certain amount of success. It has been successful in probably a third of all the cases in which it has been tried. In some instances relief after the first administration is almost dramatic, the hiccough stopping at once, without recurrence. The remedy is bound to fail in conditions presenting a definite organic condition, such as intestinal obstruction, uremia, and exudate under the diaphragm.

He is aware that the remedies for hiccough are numbered by the hundreds, and while it is acknowledged that ether is not a cure-all, it certainly is more often successful than anything that he has ever tried.

Bayer 205.

The *Lancet* of December 16, 1922, in an editorial on this subject, states that there seems no doubt that in Bayer 205 a drug has been found of extraordinary efficiency as a trypanocidal agent in laboratory animals; more than a year ago, Wenyon in England entirely confirmed the claims made by German investigators. In an address delivered at the centenary of the German Society of Medical Research on September 19 last, Martin Mayer set out the results of the experimental work carried out since 1918 by himself along with Zeiss and Menk at the Institute for Marine and Tropical Diseases at Hamburg. The laboratory results were briefly as follows:

"Bayer 205" in quite minute doses cures small animals suffering from all manner of trypanosome infections. For the mouse the curative dose is 0.00006 g., while the toxic dose is first reached at 0.01 g. Ehrlich's chemotherapeutic index for this remedy is therefore 1 to 160, in contrast with an earlier trypanocide, atoxyl, in which the index is 1 to 2. Animals can be rescued in the last stage of disease by the drug administered by any of several routes: oral, subcutaneous, intravenous, intraperitoneal, or intralumbar. Since the parasites do not disappear so quickly as with other remedies, the action of the drug could be observed on the parasites in the blood, and was found to consist, as Ehrlich had anticipated, in hindering their division. Twin, triple, and quadruplet forms were discovered in the blood, still united by broad bridges of protoplasm. Mayer found that "Bayer 205" becomes attached to the proteins in the blood serum, especially to the albumins; albumin-free ultrafiltrate from the serum was devoid of the remedy. Excretion unchanged in the urine was proved by biological test, and the drug passes over to the suckling through its mother's milk. A striking by-effect is the toxic action on the kidney resulting in albuminuria, which always seems to run a uniformly favorable course.

Up to the present time only three cases of treatment of human trypanosomiasis with "Bayer 205" have been reported. The first of these was sent by Warrington Yorke to Hamburg, after having proved refractory to tartar emetic, and improved so that he was able to return to Africa. A German case was less satisfactory, but in a Belgian from the Congo who has suffered from Gambiense infection for two years the trypanosomes entirely disappeared from the blood. The *Lancet* publishes in the same issue the first series of cases treated in England; these have been under the continuous observation of Low and Manson-Bahr at the Hospital for Tropical

Diseases. Of the nine cases, one died of cerebral trypanosomiasis, seven are apparently cured, while in one—the only instance of Rhodesiense infection—the result is inconclusive. Low and Manson-Bahr have been able to notice the return of the finer coördinated movements and psychical characteristics, so that the claim to complete cure is the more convincing.

It still remains to be seen whether the drug is capable of attacking the parasite when once it is locked up in the brain. The selective action upon the specialized renal epithelium demands, as these authors insist, further inquiry. They conclude that "Bayer 205," though not infallible, is by far the most powerful trypanocidal substance hitherto employed in man. What the substance is has not transpired. Dale has expressed the opinion that when its composition is revealed by the German manufacturers it may provide the basis for a new conception of therapeutic processes. Mayer merely stated that "Bayer 205" contains neither mercury, arsenic, antimony, nor any such active inorganic agent, and that, "like sugar," it is readily soluble in water; he added that nothing further could be said about its composition. For the present we are dependent for its supply upon the courtesy of a German firm. The German medical press has pointed out with some insistence that the first patients to be cured have been an English and a Belgian colonist, and raises the thorny question of the terms on which the secret of a remedy with such potentialities for colonizing should be given to the world.

The Action of Ergot.

DALE in the *Lancet* of December 16, 1922, asserts that the first serious attempt at isolating the active principle was made by C. Tanret in 1875. He obtained a pure crystalline alkaloid which he named argotine, associated with material which seemed to have the same chemical composition but was amorphous, and had a low specific rotatory power. Tanret called this amorphous ergotine, and a mixture of the crystalline and amorphous substance is still used in the form of a citrate. This confusion between two substances which have since been proved to be distinct from one another put back the clock, for later workers selected the crystalline form to work with and came to the conclusion that pharmacologically it was inactive, and probably therefore therapeutically also. Not till a few years ago was it discovered by Bargen and Carr that the amorphous material was different in composition from the crystalline, and was, in fact, an intensely active substance, which was called ergotoxine. The details of its action had been worked out by Dale and others.

From tracings of experiments conducted in the laboratory, ergotoxine might have been regarded as a stimulant of plain muscle responsible for the therapeutic action of ergot. It did not receive a very thorough clinical trial, but such as this was no enthusiasm appeared to be aroused. The majority of practitioners still used the extracts of the British Pharmacopœia. This was discouraging to the laboratory workers, for the methods used in the preparation of these B. P. extracts might almost have been designed for the purpose of excluding ergotoxine from the resulting preparation. On the other hand, the preparations in popular use in the United States were made in quite a different way by extracting ergot with acidulated alcohol, thus conserving much ergotoxine. Thus two points of evidence which might be deduced from general experience appeared to cancel one another. Dixon had suggested that the potency of the therapeutic extract of ergot could approximately be measured by its power of raising the blood-pressure. Other workers had suggested using isolated uterine muscle as a test substance and were led by this method of testing to attribute particular potency to dialyzed ergot, which contained no ergotoxine. Meanwhile various chemists had identified the pressor substance in commercial ergot as tyramine and the activator of isolated human muscle as histamine. These proved to be putrefactive bases easily synthesized, and not

alkaloids specific to ergot. Tyramine was easy to obtain from tyrosine and histamine from cheese. Putrefactive bases form a fairly abundant constituent of certain preparations derived from the soya bean, and the action of ordinary bacteria produces them in the normal intestine. It thus seemed an extravagant assumption to suppose that they would have a marked therapeutic effect, and the problem remained unsolved.

During the last few years a new point had arisen. Stoll, of Basle, extracted from ergot an alkaloid which he described as the long-sought active principle, and called it ergotamine. It was evident that this substance resembled closely ergotoxine. Both were substances of very high molecular weight, and even if not exactly similar in formula were obviously closely allied. Certain preliminary physiological experiments, however, appeared to show that its pharmacological action was different from that of ergotoxine. Dale had suggested that the point should be cleared up by an exchange of specimens, and after a few months both sets of workers were in complete agreement that no difference between the pharmacological action of the two extracts could be established. He showed tracings in support of this statement, and also a picture of gangrene of the comb of a cock, proving that this extract could cause one of the phenomena well known to result from excess of ergot.

The question, then, remains at present at the stage of inconclusive evidence as to whether the therapeutic action of ergot was due to its specific alkaloids on the one hand, or to the putrefactive bases on the other. The practical points arising are as follows: If the specific alkaloids are the important factor, the case for retaining ergot in the B. P. is established, but the extracts should then be made so as not to lose the alkaloids in the process of extraction. If, on the other hand, the putrefactive bases were responsible for the therapeutic action, there was no case for retaining ergot in the B. P. —it would then be better to prepare these by other means. There were many directions on which the discussion might throw light. The value of certain proprietary preparations might have to be estimated by clinicians. The citrate as now prepared did contain the specific alkaloids. Ergotamine, which was sold as gynergin abroad and femergin in England, might be allowed a more systematic clinical trial, and if the conclusions were favorable the specific alkaloids might be reinstated as the active principle. At any rate, what was true of ergotamine was also true of ergotoxine.

He begged for further help from clinicians, for the present problem did not seem quite worthy of scientific medicine.

Post-prohibition Alcoholism.

In the *Chicago Medical Recorder* for December, 1922, GERTY states that the subject of treatment cannot be entered at much length. For ordinary acute alcoholics and patients with delirium tremens the problem is relatively simple. For the present acute alcoholics this is not true. Treatment must be given early and be rigorous. Gastric lavage followed by the introduction of about four ounces of magnesium sulphate solution should be a routine measure. Water should be given freely and a saline cathartic should be administered every morning. Sodium bicarbonate in drachm doses, three times a day, has been used, though the effect is certainly not pronounced. To prevent exhaustion and secure very necessary rest, sedative measures are imperative. For this purpose the continuous bath with a temperature of 97° F. for eight to ten hours at a time is one of the most effective means we have. It may be alternated with hot packs. These, especially the baths, are excellent means of restraint also. Veronal in small repeated doses—two grains at four-hour intervals—is helpful. In some cases paraldehyde (two drachms) may be used. Generally it is better not to use paraldehyde, morphine, or morphine with hyoscine, if it can be avoided. When exhaustion threatens and

other means fail the use of these drugs is sometimes necessary. Supportive treatment is imperative. Digitalis, preferably the tincture, should be given to all of those suffering from any of the severe types of poisoning. It is not well to wait for a weak and irregular pulse. Strychnine is less useful, but may be used in a precautionary manner.

Tissue destruction is rapid in these patients. It is important to supply some readily assimilable food. These patients will take but little nourishment. At least 1000 calories a day should be supplied and as much more as possible. Glucose in 20-per-cent solution should be given by mouth. If it cannot be retained a 6-per-cent solution should be given per rectum. Milk is, as always, an excellent food. In a few cases, lumbar puncture has seemed to have a favorable effect.

Gerty concludes:

1. Poisoning by alcoholic beverages, and more particularly by those now being consumed as alcoholic, is dreadfully pernicious.

2. War and early demobilization caused a marked decrease in alcoholism; this decrease continued through the first year of prohibition, and during this year the low level of alcoholism was reached. Since July 1, 1920, there has been a steady increase in alcoholism.

3. A special study of this late increase shows that: (*a*) Alcoholism in all forms has increased since July 1, 1920, but has not reached a prewar or preprohibition level. (In 1917 there were 4162 alcoholics; in 1920, 1199; in 1921, 1636.) The present tendency is toward increase. (*b*) The number of more definitely pathological cases of alcoholism has increased greatly and has passed both prewar and preprohibition levels. On a percentage basis the preprohibition level has been passed, and the prewar level equaled. The morbidity and mortality are greater and the type of poisoning different from that formerly seen. (*c*) The age proportion of alcoholics has remained constant for each year, and the general conclusions as to increase and decrease for the whole period hold true for alcoholics of each age level. It is too soon to make definite statements as to the number of new alcoholics appearing.

4. A nation-wide study of this problem on the basis of accurate statistical observations, preferably in hospitals, is indicated. Scrupulous records should be kept. A special effort should be made to determine the number of new or post-prohibition alcoholics.

The Specific Gravity Fixation Test and Phenolsulphonephthalein Excretion.

HUBBARD, in the *Clifton Medical Bulletin* for December, 1922, states that the results of specific gravity fixation tests have been compared with excretion of phenolsulphonephthalein on four hundred and sixty-eight patients whose diet and fluid intake were not controlled. The results showed, first, that decreases in specific gravity difference paralleled decreases in the excretion of the dye when less than twenty-five per cent was excreted, but did not parallel it when more was excreted; second, increases in the per cent of urine excreted at night paralleled decreases in the 'phthalein test between values of sixty and twenty-five of that test; third, when the dye excreted was lower there was not a corresponding increase in the per cent of urine excreted at night; fourth, when the 'phthalein test was more than seventy the number of cases which showed an increased night urine was increased; fifth, the specific gravity of the specimens was low when the 'phthalein was less than thirty, but bore no relationship to any of the other tests studied when more of the dye was excreted.

Taking a relative increase in the amount of urine excreted at night as one of the earliest symptoms of nephritis, and a decrease in the range of specific gravity as one of the results of kidney disease—things which have been often stated, and which are borne out by the comparison presented here—the following conclusions may be drawn from the results summarized above:

If between sixty and seventy per cent is excreted the kidneys are probably functioning normally. If between forty-five and sixty per cent is recovered further tests are needed before the presence of a slight renal involvement can be excluded; the probability that there is such an involvement increases as the 'phthaleins in this range decrease. If the 'phthalein excretion is less than forty-five a condition of renal impairment should be assumed, and in most cases can be confirmed by the specific gravity fixation test. Values between thirty and fifty can be so confirmed because most of such cases excrete an increased proportion of the total urine at night, and those below thirty because most of them show a decreased range in specific gravity, but those above thirty do not as a rule show a decreased difference in specific gravity, nor do those below thirty regularly show increase in the amount of urine excreted at night.

The Treatment of Hyperemesis Gravidarum.

In the *Ohio State Medical Journal* for January, 1923, INGLIS states that in the treatment of pernicious vomiting of pregnancy, perhaps the most popular remedy of late years has been corpus luteum extract, preferably given intravenously.

Six or seven years ago, Hirst began the use of corpus luteum extract in the treatment of the nausea of pregnancy. His theory was that every woman is constantly absorbing corpus luteum, but when pregnancy supervenes the luteum body grows on the surface of the ovary for three months, during which time there is little or no absorption, consequently, for the first two or three months of pregnancy, women suffer nausea and are again relieved when this body begins to decrease in size. He concludes, therefore, that this is not a coincidence, but cause and effect.

Several authors advocate the use of adrenalin in increasing doses; others mention ovarian extract, desiccated placenta, thyroid gland, mixed stock vaccines, serum of healthy gravidæ, and blood transfusion, the donor being a post-parturient.

Among a large number of drugs suggested, chloral and the bromides seem to be the most popular sedatives. Apothesine has its advocates. Veronal has filled a rôle that in his practice has been important. Electrotherapeutics come in for a share in the treatment.

A volume has been written on dietary measures to be pursued in the severe vomiting cases. The older method of iced liquids, milk and broths is giving way to solid foods with no liquids. High carbohydrate feedings by mouth and rectum are mentioned.

Speidel depends upon absolute rectal feeding, using the following solution:

Beef peptonoids	100.
Glucose	50.
Calcium chloride	0.3
Sod. bicarbonate	3.
Sod. chloride	4.
Distilled water	1000.

The old Copeman treatment, which consisted of stretching the cervix with the finger, has been the means of stopping many a patient's vomiting; likewise the Bennet treatment of carbolic acid and iodine applied to the cervix has effected cures.

This therapeutic summary, incomplete as it is, should be sufficient evidence that hyperemesis gravidarum, to some degree at least, is a neurosis, and that until we are able to identify some specific toxin or toxins which are the basal etiological factors, we might better treat this trouble by suggestion, and also symptomatically.

By way of further evidence we may compare *eclampsia* with *hyperemesis*. The former attacks all classes of pregnant, parturient and puerperal women. It also has the appearance of a true toxicity, and its treatment is fairly well outlined and understood by most careful obstetricians.

A few years ago, after treating a goodly number of vomiting cases in a more or less empirical way, Inglis decided to choose lines of treatment culled from all the litera-

ture obtainable on the subject, and which collectively in one clinic had yielded the best results.

In the first place the patient was always sent to the hospital, where a light, cheerful room was obtained. The family and friends were forbidden to see the patient except on infrequent occasions. Nurses were cautioned to reassure and encourage the patient as to her recovery. No food or water was given by mouth until vomiting had ceased for eighteen to twenty-four hours.

It was explained to the patient that gastric lavage would be necessary after every spell of vomiting, that this ordeal was rather severe but should be kept up regularly as long as vomiting lasted.

Sufficient to say, the majority of cases required few lavages after the first day.

Enemata of sodium bicarbonate solution were given three times daily, with the patient in the knee-chest position if possible.

Rectal alimentation was used if food was withheld longer than one day, or if the patient was much exhausted.

For nervousness and restlessness bromide of soda was given per rectum in 40-grain doses. More frequently veronal grs. 2 by mouth with a teaspoonful of water, or grs. 5 per rectum, were given for sleeplessness, nervousness, or to check the nausea.

Patients improved quicker and suffered less if they were kept in a slightly somnolent condition.

The problem of feeding is important, and much depends upon the time to begin feeding, the kind of food, and the frequency of the meals. After there had been a cessation of vomiting for eighteen or twenty-four hours, a marked degree of thirst generally developed, and the anorexia no longer persisted. Then solid food was given, consisting of scraped meat seared on a hot griddle, or white meat of chicken with buttered toast, rice pudding, medium boiled eggs, a creamed baked potato, or any solid food which the patient could digest easily. This feeding was generally given every three to four hours.

If vomiting returned, gastric lavage was again resorted to and no food by mouth given for six to twelve hours. Iced orange juice and pineapple juice diluted and sweetened were given the third or fourth day after feeding by mouth was begun. In case these drinks were tolerated, water and other liquids were given freely.

During these days of treatment, retroversion of the gravid uterus, if present, was cared for by digital manipulations, with the patient in the genu-pectoral position; cervical erosions, if needing treatment, were touched daily with a mixture of phenol and iodine.

One patient in twenty-three could not stand the passage of the stomach tube as the reaction was too depressing, and seemed to leave her greatly exhausted. It would likewise be contraindicated if gastric ulcer were present, but no such cases were encountered.

Corpus luteum extract was not used in these cases, except in a few of the earlier ones and in several which had been treated with that preparation before coming into the hospital. It was not found to be a specific for hyperemesis.

The isolation in the hospital, the unpleasantness of the stomach tube, the thirst, which was usually marked, and the assurance of a complete cure in a short time, were all factors in the treatment which tended to distract the patient's mind and to change her line of thought entirely.

The use of sodium bicarbonate in the enemata is one means of counteracting any tendency to acidosis if present.

Veronal and bromides are depressomotors which seem peculiarly adapted to relieving restlessness and sleeplessness, while the former also has a very favorable influence in allaying the nausea.

It is difficult to say just what cases of hyperemesis call for the termination of pregnancy. Some writers intimate that it should be done when the "black vomit" is present; or for the jaundiced cachectic patient; or when the mental state is impaired; but the symptomatology of every

case should be carefully studied, and the treatment adapted accordingly.

It is a subtle, treacherous disease, and unless a marked improvement is apparent in a few days it is advisable to terminate the pregnancy. This gives the patient the best chance, although many cases are reported in which the disease progressed to a fatal termination, even after the ovum had been expelled from the uterus.

The consensus of opinion among many accoucheurs as to the method of emptying the uterus seems to favor the two-stage operation, namely, dilate and pack the cervix and lower segment of the uterus with gauze, then complete the operation the following day, using a light gas anesthesia, if necessary.

Postoperative Pneumonia.

ELWYN, in the *Journal of the American Medical Association* of December 23, 1922, states that the study of his cases was undertaken to determine (1) the incidence of pneumonia following operations under general anesthesia, and (2) the etiologic factors concerned in its production.

Of 2932 operations under general anesthesia, eighty-one, or 2.76 per cent, were followed by postoperative pneumonia. Of these, there were 1080 operations on the stomach, gall-bladder and ducts, appendix, hernias, small intestine and large intestine, and exploratory laparotomies, with 6.29 per cent of postoperative pneumonia; and 1852 operations on other parts of the body, with 0.70 per cent of postoperative pneumonia.

Operations on the stomach were followed by pneumonia in 13.8 per cent of the cases.

There was only one case in which an upper lobe alone was involved, and only two cases in which an upper lobe was involved in addition to a lower lobe; in all the rest there was involvement of one or of both lower lobes.

Twenty-five per cent of the patients with postoperative pneumonia had some infection of the respiratory tract previous to the operation.

Bronchitis may result from the irritation of a healthy mucous membrane if the anesthetic is used in a large dose. Similarly, a mild tracheitis or bronchitis may be converted into a severe one.

Collapse of the lower lobe of the lung or of a portion of one is a not uncommon occurrence after abdominal operations. When this persists for a certain length of time, any infection of the bronchi has a great tendency to extend into the collapsed lung, resulting in pneumonia.

Hypostatic congestion predisposes to pneumonia in the same manner as postoperative collapse of the lung; in the presence of bronchitis, pneumonia may result.

Postoperative collapse of some portion of the lung may also occur after abdominal operations under local anesthesia. In the presence of bronchitis, pneumonia may result.

Prevention of pneumonia may be aided (1) by postponing the operation, whenever possible, until any respiratory inflammation has subsided; (2) by a minimum use of the anesthetic, administered preferably by an expert; and (3) by the use of digitalis whenever there is a suspicion that circulatory failure may occur. However, as long as massive collapse of the lung is not preventable, according to our present knowledge, a certain number of cases of postoperative pneumonia are bound to occur after abdominal operations.

Actinomycosis of the Gastrointestinal Tract.

BROGDEN, in the *Journal of Laboratory and Clinical Medicine* for December, 1922, states that a review of the literature on the subject and a study of his series of cases show that prognosis is unfavorable in all cases of actinomycosis of the intestinal tract. Treatment is successful only when diagnosis is early before sinus formation and involvement of adjacent organs, so that the primary foci can be entirely removed and later Roentgen ray, radium, and the iodide treatments given. A study of fourteen cases of actinomycosis of the gastro-

intestinal tract in the Mayo Clinic since 1909 seems to warrant conclusions as follows:

Actinomycosis of the gastrointestinal tract is not so rare as has been generally believed; thirteen of the Mayo Clinic cases occurred in the last four years.

The acute form is more common; it usually begins as a typical attack of acute appendicitis. There may be one severe or several mild attacks. Six of the patients in the series gave histories of operation when a ruptured, gangrenous appendix had been removed immediately preceding the appearance of the mass. The chronic form is insidious in onset with very slight indefinite pain in the lower abdomen. There may be practically no pain, the mass being the first sign of the disease.

In both forms marked loss of weight and strength, pronounced anemia, induration and a bluish-red discoloration of the skin over the mass and around the sinuses, and pain down the right thigh with flexion of the thigh on the abdomen, are characteristic symptoms. Diarrhea is not a constant symptom of the disease. Constipation was the rule in the fourteen cases.

The anaerobic organism, *Actinomyces Bovis,* which possibly normally inhabits the gastrointestinal tract, is the cause of the disease. The ileocecal soil is most often affected; the stomach and upper small intestine are practically immune.

Carious teeth, diseased tonsils, bad hygienic surroundings, overcrowding, or anything to lessen body resistance, are predisposing factors. It is doubtful whether the disease is transmitted from cattle to man. In three of the fourteen cases there was a definite history of exposure to lumpy jaw in cattle.

A chronic discharging sinus in the lower abdomen, especially after operation and drainage of an appendiceal abscess, should arouse suspicion of actinomycosis, and repeated examinations for the ray-fungi should be made. A few cases are not diagnosed because the yellow granules are not found at the first examination. Repeated examination of the purulent material over long periods, with pathological examination of the tissue from the mass or from the walls of the sinuses, must be made before actinomycosis is ruled out.

Early operation and excision of the diseased area before the infection spreads to the surrounding tissues, frequent Roentgen ray and radium treatments over the abdomen, and large doses of potassium iodide by mouth and sodium iodide intravenously, offer the best hope of cure. In the later stages after extension of the disease to the adjacent organs and sinus formation, radical surgical measures are of no avail. Some patients apparently are cured under treatment with radium, Roentgen ray, and the iodides; others improve wonderfully only to have recurrences in from two to four years.

Death usually occurs from cachexia and extension of the disease to the liver and thorax. The average mortality is 60 to 70 per cent.

Treatment of Morphine Addiction.

In an editorial on this subject, the *Boston Medical and Surgical Journal* of December 28, 1922, states that "we would not attempt to cure a consumptive of twenty years' standing in a few weeks, so why try to cure in haste a person whose system has been saturated with morphine, and who is suffering from as real a disease as the consumptive," writes Margaret Vivian, L.M.S.S.A., London, in the *Medical Press and Record.*

Most institutions for the cure of addicts either cut them off entirely and at once, or reduce their daily allowance so rapidly that much suffering is entailed, and they are discharged in a few weeks, almost sure to relapse.

The method used by Vivian is much different and, as is logical, much more time-consuming. Whatever the patient had been taking he is immediately reduced to two grains a day, on which dosage he can live comfortably. When he has become accustomed to this dosage he will eat and feel

better. The daily dose is then reduced by one-quarter grain, each reduction remaining stationary until he has become accustomed to it. This is repeated until an allowance of one grain a day is reached, and eventually this is given at one time, in the morning, when it is most needed. From now on the reduction is carried out very slowly, one-half grain at a time, even if it takes twelve months to get rid of the last grain.

The hypodermic injection of emetine has been found a valuable ally. The writer used daily three doses of one-sixth grain each, reducing the dose after the first month or two.

Fractional Test-meal Method of Rehfuss Versus Single Test Meal of Ewald.

GOLOB, in the *New York Medical Journal and Medical Record* of January 17, 1923, states that the fractional estimation of the stomach chemistry by the procedure of Rehfuss is a clinical method of proved value, whereby both motor and secretory activities may be studied during all their phases of digestion.

The fortitude and coöperation of the patient can be secured much sooner with the seemingly more elaborate method than with the single test meal.

The single examination is inadequate, and many erroneous interpretations of the secretory activities of the stomach have arisen because of inferences based upon such examination.

The ordinary stomach tube does not completely remove the gastric contents. It is objectionable to the patient, causes considerable gagging and swallowing of mucus, cannot be retained in the stomach with any degree of comfort for any length of time, and cannot be left *in situ* until completion of gastric digestion.

The single test method of Ewald should more properly be called the single phase method. In contradistinction, the fractional estimation of Rehfuss may be termed the comprehensive method.

As aptly put by Best, "the advantages of these curves in its superiority over the older 'one sample test' are comparable to the advantages of the moving picture over a single snapshot."

A Comparative Luminal, Bromide, Diet, and Eliminative Treatment of Epilepsy.

ASHMORE in the *Boston Medical and Surgical Journal* of December 28, 1922, states that luminal has a place as a therapeutic measure in the treatment of epilepsies, and when taken in the doses used, one and a half grains twice a day for three days, then once a day, does not produce the mental torpor manifestations which occur in the case of administration of bromides, and in many cases it is more beneficial; yet it should be used with greater care and in selective cases, because of toxic effects which may be attributed to it. Neither drug appears to be habit-forming.

In cases of both luminal and the bromides, active treatment periods completed, the seizures were more nearly controlled with the former drug. From the standpoint of numbers and oftentimes in regard to severity, cases of idiopathic origin were the more responsive. The diet and elimination treatment group obtain last place on the list, but are very important, either alone or in conjunction with other recognized methods of treatment. No particular laxative or cathartic appeared superior to others during this period. Beneficial effects were noted in all groups during post-treatment observation period.

Treatment of Migraine.

In the "Memoranda" columns of the *British Medical Journal* of January 6, 1923, O'SULLIVAN states that a recent contribution lauding luminal in migraine prompts record of other experience.

When despairing of the use of bromides in epilepsy, atropine was added, or when the "mal" was entirely "petit" used alone, hope returned, and very notable successes followed.

In migraine for years the best treatment, unfortunately limited to those cases exhibiting warning symptoms, was found to be hourly administration of calomel to catharsis. Likening migraine to sensory or subcortical epilepsy—that is, to the action of the epileptic poison on the basal ganglia—atropine was tried. From the experience of eight years it may be confidently asserted that the remedy is as nearly a specific as the state of knowledge permits. The dose is 1 to 3 minims of liquor atropine, thrice a day after meals. Continuous and indefinite administration is unnecessary. A course of three weeks or more to commence with, followed by ten or fourteen days' treatment at intervals determined by the reaction of the particular patient, suffices.

The Action of Drugs on Respiration.

In the *Journal of Experimental Medicine* for January, 1923, SCHMIDT and HARER say they are not prepared to state that a selective depression of expiration is responsible for the specific action of morphine and heroin in cough and dyspnea in human beings, for their experiments were made on animals which are scarcely to be regarded as fit subjects for the study of the therapeutic action of these drugs. They have made several experiments on dogs, using a pleural cannula, and found that when the lung was completely reëxpanded, and when the rate was decreased following 5 or 10 mg. of morphine, a selective depression of expiration was evident, and Cushny found that the decerebrated cat reacted to morphine as did the rabbit. If these results are regarded as applicable to the therapeutic use of these drugs, it is at least suggestive that the conditions in which they are regarded as specifics—cough and dyspnea—are characterized by active expiratory efforts, and the response of the cat to CO_2, after expiration was made passive by morphine or heroin, was certainly not dyspnea.

A comparison of the three alkaloids—morphine, heroin (diacetyl morphine), and codeine (methyl morphine)—shows that morphine is not nearly as specific an expiratory depressant as heroin, while codeine has never shown such action at all. The average minimum dose of morphine required to produce definite expiratory depression and a slower rate was about 5 mg. in their experiments, and practically the same results could be obtained, more uniformly, with 0.25 mg. of heroin. Heroin was, therefore, about twenty times as effective as morphine.

The negative results obtained with codeine were a surprise, in view of the clinical value of the drug, and cast some doubt on the value of these experiments in explaining the clinical usefulness of the other alkaloids. However, while the experiments have failed to demonstrate any constant action of codeine in the decerebrated cat except stimulation of the cord, it may be that this stimulation was sufficient to overcome a simultaneous depression of expiration similar to that of morphine or heroin, and that this stimulation of the cord is less marked in other animals than in the cat.

In a second article in the same journal, in which their experiments covered another series of drugs other than morphine, they state that the depressant drugs studied were found to resemble morphine and heroin in that they depressed expiration more than inspiration, but they acted only in narcotic doses and always depressed inspiration at the same time. Ether caused a sharp expiratory rhythm, persisting until narcosis was very deep, probably a result of irritation of the air-passages. Chloroform sometimes caused dyspnea, even in very deep narcosis, probably because of circulatory depression. Hydrated chloral made respiration more rapid, but shallower. Urethane usually made expiration active, often with inspiratory pauses, such as may follow vagotomy. Magnesium seemed to produce the most uniform, uncomplicated depression of all the depressants tried. Luminal resembled morphine and heroin more closely than any of the general depressants, making expiration passive without depressing inspiration, but it acted only

in narcotic doses, unlike morphine and heroin.

Caffeine and strychnine, whenever they caused acceleration after morphine, brought back active expiration. Atropine never stimulated, and commonly acted as a synergist to morphine.

It is suggested that the results outlined in this and the preceding paper point to the existence of a separate central mechanism for the control of each of the phases of respiration, and that while each responds to the same chemical stimuli, the threshold of the expiratory is higher than that of the inspiratory. Evidence is presented to indicate that if expiration remains passive a marked increase in depth of breathing may slow the rate, and a respiratory mechanism that lacks active expiration may be so inefficient that a CO_2 concentration which stimulated when expiration was active may depress when it is passive.

Hyperemesis Gravidarum.

SELLERS, in the *New Orleans Medical and Surgical Journal* for January, 1923, states that the treatment should be started early. First make a careful anatomical examination, starting at the head and especially considering the genital organs. Look for an erosion or a stenosis of the cervix and any abnormal position of the uterus and treat accordingly.

Corpus luteum and ovarian extract given by mouth, intramuscularly or intravenously have not proved to be of much benefit in his hands. Adrenalin by hypo and by mouth was first advocated by Rebaudi. He thinks it helped one or two of his cases. Zuloaga declares such adrenal insufficiency can be diagnosed by a white line after drawing the finger-nail over the skin. This he declares can be relieved by the use of adrenalin solution 1:1000.

Cray reports very good results from the use of placental extract. Blood transfusion has questionable results.

Sellers is personally inclined to think very highly of the carbohydrate treatment outlined by Titus. It has proven most satisfactory to him. When nausea starts up and continues through the day, start a Murphy drip, using eight per cent glucose and two and a half per cent sodium bicarbonate, always giving a saline flush first. Isolate the patient at once, preferably in a hospital. Keep the family away as much as possible, as sympathy from them makes it hard to handle the patient.

In severe cases the duodenal tube has the greatest field of any form of treatment when intelligently and judiciously used. He used it in two cases which he has reported. He found it quite difficult to insert in one of the cases. Hume offered the following suggestion, which helped him very much indeed. His suggestion was to give morphine sulphate gr. ¼ and atropine sulphate gr. 1/150 forty-five minutes before inserting the tube, and to spray the nasal pharynx and pharynx with a two-per-cent cocaine hydrochloride solution; then pull the tongue well forward and swab the base of it with a five-per-cent cocaine hydrochloride solution ten minutes before inserting the tube. He then inserted the tube into the stomach with slight difficulty. The tube was passed into the duodenum with the usual technique.

He kept the tube in for six days, giving eight per cent glucose, two and a half per cent sodium bicarbonate, and 40 grains of sodium bromide through the duodenal tube in the form of a drip, alternating with a modification of Bacon's formula:

20 grammes of glucose;
125 grammes of beef peptonoids;
3 grammes of calcium chloride;
4 grammes of sodium chloride;
3 grammes of sodium bicarbonate;
Water to make 1000 cc.

He continued giving the glucose and sodium bicarbonate through the tube until the patient developed a transient glycosuria; then he reduced the glucose and increased the other fluid until the urine was sugar-free.

There are certain cases in which he feels that the intravenous administration of glucose is very beneficial. Great care should

be exercised in preparing the solution, and only the very best grade of glucose used.

If the patient still does not show any signs of improvement in a comparatively short while, if acidosis as shown in the daily examination of urine does not improve, if vomiting of bile-stained fluids and coffee-ground material occurs, if yellow stain of the skin and sclera persists or grows deeper, if temperature goes above 101°, if the blood-pressure falls day by day, and if the urine is less in amount and greater in specific gravity and with a high ammonia coefficient, the uterus should be emptied. We must not lose sight of the fact that this is a very dangerous procedure for such a bad subject.

A large percentage die before absorption is complete, and many just after from shock and loss of blood. Great care should be exercised to prevent shock and the simplest methods possible used to induce abortion. Preferably give the patient nitrous oxide and oxygen as an anesthetic. Gently dilate the cervix and either pack with gauze or insert catheters. Occasionally in primiparæ where the cervix is long and hard and the patient in a serious condition, a vaginal hysterotomy should be done.

Post-tonsillectomy Pulmonary Abscess.

BOTSFORD, in the *California State Journal of Medicine* for January, 1923, states that the preponderance of expert opinion is that the chief etiologic factor in the production of lung abscess following oral surgical operations is aspiration of infective material during or subsequent to the operation.

Anesthesia of sufficient depth to abolish laryngeal reflexes or so light as to cause irregular gasping respiration may be contributory.

Local anesthesia does not prevent their occurrence.

The insufflation apparatus should not be permitted to deliver air at a greater pressure than 30 mm. of mercury.

Semiprone posture postoperatively is important in prevention of aspiration.

The whole trend of modern research is in the line of defining the dangers of too deep anesthesia, and the increasing prevalence of post-tonsillectomy pulmonary abscess may be due in some degree to a disregard of this warning.

The final criterion—the end result to the patient—is influenced by the anesthetist's skill in obtaining and maintaining the lightest degree of anesthesia consonant with the necessary surgical procedure.

Injury of the Spinal Cord in Breech Extraction.

CROTHERS, in the *American Journal of the Medical Sciences* for January, 1923, reports five cases in which crippling depended on injuries to the spinal cord apparently caused by breech extraction. In making the diagnosis, pathologic, clinical and physiologic facts are considered.

Four of the cases showed conclusive evidence of practically complete transection. In transections the following syndromes may be expected:

1. High cervical transections are probably all fatal on account of the proximity of the lesion to the phrenic nerves and the medulla.

2. Transections below the fatal level, if accompanied by enough hemorrhage to destroy the cells of the lower segments, result in anesthesia and permanent flaccidity below the lesion.

3. Transections confined to a few segments and not involving the lumbar enlargement will show in succession the following syndromes:

(*a*) Anesthesia with flaccid paralysis. After a few days or weeks the flaccid paralysis will be modified. The infant will then show:

(*b*) Anesthesia, as before, a zone of flaccidity corresponding with the destroyed anterior horn cells, and below this zone, reflex activity of distinctive type. During this stage the bladder and rectum become "automatic."

(*c*) On theoretic grounds it seems likely that this stage of reflex activity will last only so long as severe infection is avoided.

One child showed evidence of an incomplete lesion. She showed flaccid paralysis dependent on destroyed cells and, lower, spasticity from tract involvement, with sensory disturbances and sphincter disorders proportionate to the involvement of cells and tracts.

It is evident that the vast majority of obstetric spinal-cord injuries are caused by maneuvers incident to breech extractions.

From a theoretical consideration of the forces at work in extractions it seems justifiable to suggest that traction on the cord, when combined with suprapubic pressure or uterine contractions on the head, may cause collapse or death from herniation of the medulla through the foramen magna.

If this possibility can be proved by suitable laboratory or clinical studies, it will be proper to challenge the statement, now almost universally accepted, that asphyxia is the only important cause of fetal death in breech extractions.

Syphilitic Headache.

In the *California State Journal of Medicine* for January, 1923, SUTTON states that aside from the severe headache seen so often in early syphilis, there is little that is typical in the symptomatology of syphilitic headache. Syphilis should be suspected in all instances where head-pain is a prominent and chronic symptom. Headaches which do not disappear on the correction of refractive errors, on the removal of foci and the draining of sinuses, nor which do not respond to that procedure known as a "cleaning out of the intestinal tract," should arouse the suspicion in the mind of the attending physician that syphilis may be present, and an examination for other signs of syphilis should be made. Among the various diagnostic procedures enumerated by Stokes and Busman, the examination of the fundus, the comprehensive study of the central nervous system, the eye, ear, nose, and throat examination, and a careful skin and mucous membrane examination, are the clinical procedures most often rewarded by the finding of other signs of syphilis. In syphilis of the vault the *x*-ray may often confirm the diagnosis, while a solitary brain gumma may cast the shadow of a brain tumor. Fluoroscopy may reveal an aneurism in the chest, or other evidences of syphilis. The serum Wassermann test and the spinal fluid examination (cell count, estimation of protein, Wassermann, and colloidal gold) are of paramount importance in the diagnosis of syphilis, and especially of syphilitic headache. While the therapeutic test may occasionally be fallacious it should be used in all doubtful cases.

Treatment of Arsphenamine Dermatitis and Certain Other Metallic Poisonings.

In the *Archives of Dermatology and Syphilology* for January, 1923, MCBRIDE and DENNIE conclude as follows:

1. Sodium thiosulphate given intravenously and by mouth rapidly shortens the course of arsenical dermatitis.

2. It is a successful neutralizing agent for acute and chronic mercurial poisoning.

3. To secure the best results, it must be given intravenously.

4. In its pure form, it is non-toxic up to 2-gramme doses.

5. Certain conditions which impair the liver or kidneys are predisposing factors in the production of arsphenamine dermatitis.

Acute Constitutional Symptoms Due to Radiations.

ROLLESTON, in the *British Medical Journal* of January 6, 1923, states that as acute constitutional symptoms are comparatively rare in ordinary practice, the question naturally arises on what further factors their occurrence depends. From Warren and Whipple's experiments, in which high doses of *x*-rays over the abdomen constantly produced these grave symptoms in dogs, it appears that the dosage is a factor of great importance. The factor of the dosage has been generally recognized by

x-ray workers, and is being more abundantly proved by the reactions seen after the Erlangen treatment. Two other possible factors may be mentioned: (1) Edsall and Pemberton argued that persons already in a toxic condition are more prone than healthy individuals to manifest acute constitutional symptoms, because they are already embarrassed in dealing with the intoxication, and if to this strain is added the metabolic labor of dealing with the complete decomposition of a large amount of broken-down tissue products, the metabolism may collapse, and in consequence signs of severe intoxication appear. This is not, as shown by Warren and Whipple's experiments, an essential condition, and as many of the patients exposed to abdominal radiation are in a toxic state but do not manifest the symptoms of acute constitutional disturbance, it cannot be regarded as a very far-reaching factor. (2) The patient's idiosyncrasy, rather vague as this influence may be, must be considered as a factor that may possibly favor the development of an acute reaction. This question has been much debated, and it appears that while there is naturally a certain amount of variation in the susceptibility of individuals to radiations and that reactions of different kinds are occasionally seen, an extreme degree of sensitiveness, comparable to other idiosyncrasies, is very rare.

Treatment is first and foremost preventive; to avoid the early transient disturbance the *x*-ray rooms should be properly ventilated. The avoidance of the grave constitutional symptoms mainly depends on care in the technique and dosage, but other factors may play a part, and the state of the organism must be taken into account. Proust, Mallet and Coliez mention a red blood count below four millions and a low blood-pressure as indications that *x*-ray therapy should be conducted with great caution. To avoid toxemia Beck practices surgical exposure and removal of as much as possible of the growth, and then treatment by *x*-rays or radium of the remainder of the tumor in the open wound. In this way any discharge from the radiated tissue passes into the dressing instead of into the circulation and toxemia is minimized. Another advantage is that a smaller dose of radiations is required than in the ordinary method of treating deep-seated tumors. In 100 cases thus treated he had not had any death from toxemia, whereas with the usual method four of his patients had died from toxemia.

It is to be hoped that Auer and Witherbee's experimental protection of the skin of rabbits against the harmful effects of *x*-rays by the previous injection of horse serum may be applied to protect the deeper tissues of man against radiations. But before this is done further work is necessary; it is not yet known if the sensitization produced by horse serum increases the resistance of the cells of malignant growths to radiations.

When the symptoms have appeared, elimination of the toxic proteins may be assisted by diuresis, and for this purpose plenty of fluids should be given by the mouth. In conformity with his unproved hypothesis that the responsible factor is acidosis, Lange advocated the administration of sodium bicarbonate, and reported benefit from its use before and after radiation.

The Secretion of Gastric Juice in Health and Disease.

CARLSON, in *Physiological Reviews* for January, 1923, states that the main established facts in the pathology of gastric secretion may be summarized as follows:

1. In otherwise normal persons the gastric secretion may vary from hypersecretion through normal and down to complete anacidity. These variations by themselves do not therefore produce disease symptoms.

2. In chronic disorders gastric secretion and gastric acidity are decreased on the whole parallel with the degree of general cachexia. The most important factor in this depression is probably the cachexia of the gastric glands.

3. There is no disease known capable of inducing true gastric hyperacidity. The pathological deviations in acid and pepsin

concentrations are invariably in the direction of a decrease.

4. Essential hypersecretion (Reichmann's disease) probably does not exist. The factors definitely known to induce hypersecretion are delayed gastric evacuation from obstruction at the pylorus or gastric stasis due to factors that do not at the same time depress the gastric glands. The hypersecretion that is frequently seen in certain so-called nervous disorders has not been sufficiently studied in regard to gastro-intestinal motility. If this hypersecretion is primarily of nervous origin, it may be due to depression of the inhibitory secretion tonus quite as much as to excess activity of the appetite nervous mechanism. The marked hypersecretion following a prolonged fast does not seem to induce symptoms of disease.

5. The gastric juice (in normal or greater than normal quantities) can itself produce anatomic or functional disorders only when it acts on tissues or mechanisms that are already pathological.

6. The rôle of the gastric juice in the maintenance of health and in the etiology of disease has been exaggerated, to the neglect of the importance of normal gastric motility.

Studies in Ether Anesthesia.

In its "Annotations" the *Lancet* of January 6, 1923, states that an essay, showing signs of prolonged and careful research, has recently been published by Karl Gramén of Stockholm. His work deals with about 700 quantitative analyses of ether in the expired air and in the tissues of persons undergoing ether anesthesia. He has come to certain practical conclusions with regard to the best methods for counteracting the effects of this anesthetic, and while some of his conclusions may be regarded as unorthodox, others are confirmatory of reforms which have already been introduced by certain anesthetists. Using a modification of the bichromate test for the quantitative analysis of ether in the tissues, he found that in the course of ten or twelve minutes the ether content of the blood rises to about 80 mg. per cent, and remains at this level with only slight variations during the rest of the narcosis. After its completion the ether content of the venous blood falls rapidly during the first fifteen minutes, in the course of which it is reduced by nearly 50 per cent. The elimination of the ether proceeds more and more slowly, taking one to two days. While the patient's age and health do not affect this process, its rate varies directly with the duration of the narcosis.

It has been customary to interdict suckling for a considerable time after a nursing woman has been operated on for fear of the ether in her milk proving injurious to the infant. The result of this practice is that the supply of milk is often permanently reduced, and though Dr. Gramén's investigations show that the ether content of the milk is approximately that of the blood, he has come to the conclusion that an infant may safely be put to the breast two hours after the completion of narcosis. Of special and personal interest to anesthetists is his observation that after the completion of a narcosis of average duration, the air expired by the anesthetist during two minutes contains one drop of ether. With only one exception an increase of B-oxybutyric acid in the blood during narcosis was found, and among non-diabetic patients ketonuria was found in 9.9 per cent before narcosis and in 67.7 per cent after it. Ether evidently induces achylia, and of 21 samples vomited during narcosis as many as 15 gave a negative HCl reaction, which was faint in the remaining six. All the 12 samples vomited after the narcosis gave a negative HCl reaction. To counteract this condition Gramén recommends the administration of lemon juice or 10 drops of HCl to a tumbler of water. He is opposed to the old practice of preoperative purgation, and instead of draining the body of its fluids he flushes it with water a few hours before the operation. Glucose and normal saline enemas may, in certain cases, be no

better than a plain water enema, for glucose may provoke excessive fermentation and colic, and in cases of renal insufficiency the absorbed saline solution may embarrass the action of the kindeys.

Further Clinical Experience with Insulin (Pancreatic Extracts) in the Treatment of Diabetes Mellitus.

BANTING, CAMPBELL and FLETCHER, in the *British Medical Journal* of January 6, 1923, state that the dosage of insulin is a very important factor in the successful treatment of a patient; on the one hand, we have to fear hypoglycemic reactions, and on the other, we know that glycosuria will result when the blood sugar rises above the patient's threshold level for excretion of sugar. It is, therefore, not always easy to adjust the conditions so that there is sufficient insulin present to nullify the postprandial hyperglycemia, and yet insufficient to produce a dangerous lowering of the blood sugar. They know, however, that the effect of insulin on blood sugar is not exerted immediately after subcutaneous injection, and therefore space the injections so that their effect is occurring during the period of assimilation of carbohydrates. This usually means injecting the insulin at or shortly before the meal, but instances occur—possibly due to delayed, or too rapid, absorption of sugar into the blood stream, the use of meals containing too much high carbohydrate food, etc.—in which glycosuria appears at one time and reaction at another. These, fortunately, are not common, but serve to emphasize the necessity for careful observation of the patient for a period in a hospital before discharging him to the care of his private physician. Further, the initial symptoms of reaction are so specific as to leave no doubt in the mind of any one who has seen them, and the remedy is, fortunately, easy to apply before there is any real danger.

At the end of the preliminary period of observation on a fixed diet the majority of cases of severe diabetes excrete a fairly constant amount of sugar, and this information is most valuable in determining the actual amount of insulin to be employed in treatment. In certain cases, possibly owing to daily fluctuation in tolerance for carbohydrates, the daily excretion of sugar varies and it is impossible to determine the initial dose of insulin. In these cases it is advisable to begin with a moderate dose, gradually increasing it until the desired effect is obtained. The amount of insulin used will depend not only on the carbohydrate tolerance of the patient, but on the height and fixity of the blood-sugar level.

Whether we shall in the future permit patients to have higher blood-sugar levels than at present seems advisable is a point on which there is conflicting evidence. At present they are inclined to the belief that more successful results are obtained with regard to the general well-being of the patient, clearing up of minor and even major infections, etc., if a normal blood-sugar level is aimed at. Owing to the short duration of the effect of insulin it might seem desirable to ingest the carbohydrates at one particular meal and give the extract in relation to this meal, thus avoiding the number of injections—two to three daily sometimes being necessary in the more severe cases. This, however, is not the case, as the carbohydrate is apparently stored and burned under the influence of the insulin, and during this period the patient feels like a healthy, normal person, and later, when only fat and some protein is available for burning, he gets a mild ketosis and experiences lassitude or fatigue. In their view a prolongation of the period of action is most desirable, and whether this is to be obtained by slowing the rate of absorption or by more frequent injection is a matter for further study.

After these patients are freed from glycosuria and ketosis and are permitted to use an adequate basal ration they usually feel so well that they demand increased food to satisfy their desire for exercise. In this case the authors are less particular about spreading the carbohydrate intake

throughout the day and usually prescribe an increased amount of carbohydrate with three to four times as much fat at one or possibly two meals, and a corresponding amount of insulin. The same thing may be accomplished by raising the diet instead of decreasing the initial dose of insulin. As the protein is not as efficient as carbohydrate in preventing disordered fat metabolism, the amount of fat which can be given with protein is much less than with carbohydrate. Owing to the high caloric value of fat it seems desirable to raise first the carbohydrate in the diet. When increase in calories is not so urgently required, then protein may be used and fat added in the proportion of 10 grammes of fat to each 8 grammes of additional protein.

In severe diabetics and comatose patients the alterations in metabolism under the influence of insulin are most interesting. They furnish material for a considerable amount of investigation which they hope to report upon later. The study of the respiratory quotient reveals positive evidence of the utilization of carbohydrates. Patients with any considerable carbohydrate tolerance may be expected to produce a certain amount of insulin themselves. This may be mobilized under suitable stimuli, and the initial rise in the respiratory quotient sometimes seen is probably due to this factor. The specific effect following the administration of insulin is almost coincident with the attainment of normal blood-sugar levels. Demonstration of the effect of pancreatic extracts in raising the respiratory quotient can best be made on the most severe cases of diabetes mellitus.

Other factors which must be decided in the patient's interests are his most suitable weight and condition of nutrition and the means which shall be employed to attain them, and also to what extent work shall be allowed. Following the principle of low maintenance diets in treatment it seems unwise to allow increases in weight in stout patients, or even marked increases in the emaciated. In the former, reduction of the patient's weight by using insufficient fat in the diet is recommended; in the latter it is felt that some increase in the weight is desirable on account of the associated improvement in the general condition of the patient, his resistance to infection, etc., even though an increased amount of insulin is required. Work, involving as it does the increased use of foods and consequent drain on the supply of insulin, is not to be regarded as desirable when pushed to excess, and patients are accordingly advised to moderate their usual activities.

Diabetics are perhaps more subject to infections and gangrene than any other class of patients. In such cases a distressingly high mortality has been observed. Without doubt the more recent dietetic treatment has removed many of the terrors of operation, such as coma, and has even aided in the more rapid clearing up of infections for the less severe degrees of the disease. However, many patients lose a great deal of their carbohydrate tolerance when infection is added to their diabetic condition. Further, the infections are more prone to occur in the more severe cases that do not respond favorably to dietetic treatment. For both types of patients insulin furnishes most valuable assistance in treatment in that it keeps the blood sugar normal—an important consideration in the treatment of infection—enables the patient to utilize carbohydrates, and, in consequence, prevents acidosis and removes the danger of postoperative coma. It seems clear that necessary surgical procedures may be undertaken in properly treated cases with practically no more risk than in the normal.

Attention must be paid to various other influences in the treatment of diabetic patients. Symptomatic treatment for minor complications, such as constipation, insomnia, etc., must be carried out. Psychic factors, such as fear, anxiety, and worry, are well known to produce hyperglycemia and glycosuria. The effect of insulin is so specific that these need not be considered as influencing the results of treatment, but in

this, as in all other diseases, the best results in treatment can be obtained with happy, contented patients.

The following is a summary of the results of their investigation:

1. Under treatment with insulin in patients who are not otherwise amenable to treatment:

(*a*) Glycosuria is abolished;

(*b*) Ketones disappear from the urine and the blood;

(*c*) Blood sugar is markedly reduced and maintained at normal levels;

(*d*) The alkali reserve and alveolar carbon dioxide of patients in acidosis and coma return to normal;

(*e*) The respiratory quotient shows evidence of increased utilization of carbohydrates;

(*f*) The cardinal symptoms of diabetes mellitus are relieved and the patients show well-marked clinical improvement.

2. Insulin is a specific in the treatment of diabetic coma.

3. Certain procedures are suggested as a guide in the administration of insulin.

4. Hypoglycemic reactions in man have been studied and described.

5. Hypoglycemic reactions following insulin are relieved by the administration of carbohydrates and also by the injection of adrenalin.

Surgical and Genito-Urinary Therapeutics

Five-year Survey of the Routine Treatment of Fractures by Operative Methods.

YOUNG (*British Medical Journal*, Dec. 23, 1922) reports on the cases admitted to his service in the Western Infirmary, Glasgow, from May, 1917, to May, 1922. The total number of fractures is 693. Where an anesthetic was required, chloroform was used. Out of the 693 cases open operation was carried on in 272, and 103 of these were subject to some method of direct fixation.

Wiring was resorted to in 21 cases, pinning or nailing was employed in 29, plating was used in 48, fixation by screws in 2, pin and plate were used together in 2, and ring plates were used in 1. The bones dealt with included lower jaw, clavicle, humerus, olecranon, radius and ulna, metacarpal, phalanges of fingers, femur, patella, tibia, and metatarsus. It will be seen from the table that a considerable number of epiphyseal fracture-separations were treated by this method, including upper and lower epiphyses of the humerus and upper epiphysis of the femur.

The author calls attention to the circumstance that the percentage of cases subject to open operation has year by year been increasing, that he has not been troubled by the introduction of sepsis, and that the simpler the methods and the simpler the materials, the greater will be the field of application of the direct fixation procedure in the open operative treatment of fractures. There is no report bearing upon either the progress or completeness of the restoration of function, although it may be assumed that with accurate replacement of fragments and retention in proper position, such as is secured by the open method applied early, both these ends were attained.

Considering the temporary plating of fractures of the long bones Edington (*ibid.*) writes as follows:

In the case of the olecranon and of the patella accurate apposition of the fragments is required if crippling is to be avoided; and the need of such apposition is much more clamant in them than in the case of the long bones. That circumstance may explain why surgeons were slow in systematically applying operative treatment to the latter. The impetus was not given,

in England at any rate, till the appearance, in 1905, of Arbuthnot Lane's monograph; but since then there has been an increasing number of surgeons addressing themselves to treatment by open operation. Lane's teaching focused the attention on many of the results of non-operative methods, and stimulated efforts toward the improvement of the same. But Hey Groves is correct in saying that it has also served as a stimulus to workers to improve operative methods.

It is admitted that incomplete anatomical restitution may be compatible with a good functional result. This is especially the case in fractures of the upper limb; but it obtains also in other fractures in children in whom the education of the parts is proceeding; and in slightly older patients in whom reëducation of the limb is comparatively easy. In adults, and still more in middle-aged and elderly subjects, such reeducation of the muscles and readjustment of the joint surfaces is more difficult. It may easily be incomplete, and a weakened or painful limb may result, a matter of special importance when the fracture involves the lower limb. In any case reëducation takes time and delays the recovery of the part. It is to obviate or minimize the need for such reëducation, and consequently to expedite restoration of function, that open operation is employed. By operative treatment the surgeon is enabled not only to place the fragments in good alignment, but also to coapt the broken surfaces without muscle or fibrous tissue intervening, and at the same time to employ, if required, some form of retaining apparatus. In this way an almost complete restitution of the form of the bone may be obtained, and the way presumably opened to a speedy firm bony union.

The fractures which most commonly require plating are those of the tibia, the femur, and, less frequently, the humerus. Still less frequently is it required in the case of the fibula, the forearm bones, and the clavicle.

It is advisable in simple fractures to operate as soon as possible after the skiagram has been obtained. If the operation be done early not only will the skin be free from possible vesication or ulceration, but the adjustment of the fragments will be comparatively easy. If interference be delayed, the skin may have in the interval become septic, while the muscles will have become fixed and the extensibility impaired by infiltration with exudate. When this has happened the adjustment of fragments may be fraught with great difficulty and may require very forcible handling, either by an elevator or the more powerful Murphy's lever; in some cases—for example, the femur—overlapping fragments may be angled on one another and the bone then straightened by manipulation. After coaptation the fragments may be held in position by Lane's forceps or Lowman's clamp till the plate is adjusted and screwed on.

Edington makes it a rule to remove his plates, and, as soon as they have fulfilled their function as an internal splint, that is, on the third or fourth week, he finds about the plate what he describes as a "thick, muddy fluid of dull grayish-yellow, sometimes greenish-yellow, color." This fluid is usually found between the bone and the plate, and, if unassociated with a sinus or communication with the skin surfaces it has always been proved sterile. If the screws are loose, he finds that the union of the fracture is proceeding satisfactorily. The same condition does not always obtain if the screws are holding as tightly as when they were first put in. In the case of the lower extremity a plaster-of-Paris support is applied and kept on from four to six weeks. If on the removal of the splints the union is not firm, the patient is given a plaster-of-Paris casing reënforced by wooden splints and put on crutches. He concludes his article as follows:

Operative treatment should not be a routine but properly reserved for cases in which non-operative measures fail to secure restitution of fragments.

Temporary plating is, in the case of the tibia, femur, and humerus, a reliable form of internal splinting.

Skin incision should be placed so as not

to be in immediate contact with the fracture.

With the object of encouraging the formation of callus, the periosteum should be reflected from the area to which the plate is to be applied.

Flat four-hole plates, bent if necessary to fit, and fixed with Lane's screws, give satisfactory results. External splint support is necessary. Plates and screws are removed in from three to four weeks.

Looseness or fixity of screws at time of removal is in proportion to reaction or sluggishness of the bone, and would seem to be an index of the progress of repair. Plating does not prevent delayed or non-union.

Chronic Retropharyngeal Abscess.

In the *Lancet* of November 22, 1922, BARRINGTON-WARD reminds us that a chronic retropharyngeal abscess may result from caries of the cervical spine, in which case the abscess lies between the bone and the prevertebral fascia, or it may arise from caseation and suppuration of the deeper glands of the neck, in which case the abscess lies between the prevertebral fascia and the pharynx. In both of these cases the abscess is only a complication of the originating disease, and that disease fills the picture. The onset is insidious, and the symptoms or signs of cervical caries and tuberculous cervical adenitis will have been obvious for some time before the abscess discloses its presence. These abcesses will be approached from the neck, behind or in front of the sternomastoid, and will demand a major dissection, and therefore do not further concern us now. The acute retropharyngeal abscess is quite different. It is due to a suppurative adenitis of certain glands which lie on either side of the midline between the pharynx and the prevertebral fascia, and which drain the tonsils and to a less extent the adenoid region of the pharynx.

The illness begins acutely. The child, usually under three years of age, becomes suddenly ill with fever, has difficulty in swallowing, and difficulty in breathing. The breathing is "croupy" and suggests diphtheric laryngitis. With the mouth open in a good light and the tongue depressed, the throat will be seen to be inflamed and edematous. On the posterior wall, generally to one side of the midline, will be noticed a bulging swelling. Fluctuation is recognized by the palpating finger. There may be some recent glands on either side of the neck, tender on palpation; and in some cases there may be apparent fixation of the cervical vertebræ with or without a reflex torticollis. Movements of the neck are painful, but with gentleness they can be elicited, and we are not likely to mistake this rigidity for the fixed boardlike rigidity of the neck in cervical caries.

The operation must be undertaken at once. A light anesthesia is induced. The child's shoulders are supported on a sandbag with the head thrown back. A gag is inserted and the tongue held forward. With a short or guarded knife a longitudinal incision is made into the abscess throughout its extent and the pus is mopped up rapidly as it escapes. No special after-treatment is required beyond frequent spraying of the throat with a weak carbolic and hydrogen peroxide lotion. Recovery is rapid.

Ovarian Transplantation.

FRANKLIN MARTIN *(Surgery, Gynecology and Obstetrics,* December, 1922) as the result of a study of this whole subject, preceded by a brief abstract of articles published in 1917-21 inclusive, thus summarizes his conclusions:

Clinically, there is very little to encourage one to believe that transplantation of ovaries as practiced up to the present time has more than speculative value as a surgical procedure.

There is some evidence that autotransplants are of some value in deferring the symptoms of the menopause and delaying the cessation of menstruation. It is difficult, however, not to attribute some of this evidence to suggestive therapeutics or to unattached ovarian tissue left *in situ.*

There is practically no convincing evi-

dence that homotransplants have been successful in the human female.

There is no evidence that heterotransplants have been successful where the human female has been the recipient.

There is some encouraging evidence recorded in experimental animal surgery that not only autotransplants but homotransplants and even heterotransplants have been successful and the sexual function of the castrated animal maintained.

The technique followed by the various operators on human females, in too many instances, seems unsurgical and too often is incompletely and loosely recorded, leaving the impression that the conclusions derived from such work must be unreliable.

There is, however, encouraging evidence in all of this endeavor to lead one to hope that the subject will be pursued experimentally, especially for the purpose of devising a rational and simple technique, based on the work of the serologists, the endocrinologists, the hematologists, and the practical clinical surgeons.

The Treatment by Radium of Benign Hypertrophy of the Prostate.

DENNIS *(Minnesota Medicine,* January, 1923) reports on six cases greatly benefited in so far as symptomatology was concerned by the use of radium. The technique adopted is simple. With the patient in the lithotomy position, under local anesthesia, a single wheal is made in the skin of the perineum midway between the anus and the scrotum. Using the finger as a guide in the rectum the tissues between the skin and the anterior surfaces of the two lobes of the prostate are then infiltrated, and an incision 0.5 cm. long made through the skin. The needles are then passed along the infiltrated tract into the substance of the prostate. In first treatments Dennis used also a catheter in the urethra. The avoidance of this tract is probably not important as compared with the rectum, but, if entered, it should be by intent and not by chance. For it seems quite possible that large middle lobes may be more efficiently radiated if the needles, after traversing the lateral lobes, are made to enter the prostatic urethra, and are then pushed on into the large median mass. From limited experience there appears to be little doubt but that the lateral lobes of the hypertrophied prostate can be reduced in size as much as required. The median lobe is less easily reached, unless by the transurethral route just suggested, or perhaps by entering the radium needles, not in the midline of the perineum, but a centimeter or two on either side, thus causing them to traverse the lateral lobes slightly diagonally and to meet at an acute angle in the middle lobe. The possibility of placing through the cystoscope has been considered.

Results of the Treatment of Eclampsia by the Dublin Method.

SOLOMONS (*Journal of Obstetrics of the British Empire,* Vol. 29, No. 3) deals with 204 cases occurring at the Rotunda from 1903 to 1921. The diagnosis of the disease has rested upon the following data:

All deaths associated with convulsions occurring after the sixth month of pregnancy have been considered as due to eclampsia. Before the sixth month the diagnosis rests on the pathological findings. If there is obvious chronic renal disease it should not be classed as a case of eclampsia.

No woman who gives a history of previous fits unconnected with pregnancy or labor should be included, nor has such a case been included in his list.

He has not included any case of convulsions free from albuminuria. This limitation is of the utmost importance, for there are many conditions which simulate eclampsia, such as epilepsy, heat stroke, etc.

An unconscious pregnant woman, who shows marked toxic symptoms after the sixth month, with albuminuria, is considered to have eclampsia, whether or not she has had convulsions.

As demonstrated most clearly by Tweedy

and borne out by all observers, the treatment must be meticulously carried out.

The following are some special points worthy of notice:

Starvation—*i.e.*, abstinence from everything except water. It may be asked how food poisons when the toxin is fetal. This is extremely simple to explain by the following theory. The food ingested and the toxic elements from the fetus require the same ferments in the blood to neutralize them: these are probably albuminous in nature. The fetal toxin takes some of the elements from the blood which are intended for the digestion of food. This leaves the latter with no ferment and therefore the food acts as a toxin—a toxin which may cause the familiar post-mortem signs, *e. g.*, kidney and liver necrosis. The obvious treatment, therefore, following this theory is to prevent the ingestion of food by starvation and to dilute the toxic elements. It may next be asked for how long the starvation may be continued. Usually the patient improves after a day or two: if after three days there is no improvement, then and not until then should Cæsarean section or induction of labor be recommended. There is a great advantage gained by waiting three days, and the results are more gratifying than those obtained by adopting radical measures immediately.

Stomach lavage is repeated until the return flow is clear, after which ℥ij of concentrated solution of magnesium sulphate is left *in situ*. It may be necessary to perform lavage of the stomach two or three times in an intractable case, but if possible it should not be repeated as it increases shock.

With the patient on her left side a tube is passed 18 inches into the bowel, after which water containing sodium bicarbonate ℥j to the pint is poured in and siphoned out. This is continued until, first, the return flow is fecal stained, then until it is clear. Bowel lavage is regarded as one of the most important parts of the treatment. It sometimes takes upwards of an hour before an absolutely satisfactory result is obtained, and as in stomach lavage, where a case is prolonged, repetition of this detail of treatment may be required. One to two pints of this solution should be left in the bowel.

Morphine. This part of the treatment, introduced to the British Isles by Sir W. Smyly, is believed to be of great benefit, although Dr. FitzGibbon, the present Master, is experimenting without this drug.

The injection of sodium bicarbonate solution under the breasts. This should be done as a routine in all cases except the mildest.

Close observation of the patient. This should be done if possible by a qualified doctor; if this is impossible a nurse thoroughly trained in eclampsia or a senior student should watch the patient. Many women have died of "drowning" who would have recovered if they had been closely observed in a room sufficiently lighted, with an assistant ready to swab out mucus from the throat and if necessary to bring the head and shoulders hanging over the side of the bed with the face turned toward the floor. In this way fluid will frequently be found to pour through the nose and mouth with immediate relief of dyspnea. Nothing at all must be given to the patient by mouth when she is unconscious.

Of 204 cases there were two deaths, a mortality of 0.29 per cent. The number of fits has an important bearing on prognosis.

In this relation FitzGibbon publishes a paper in which he, after discussion of the matter, warmly commends the treatment adopted at the Rotunda Hospital, with the exception that the morphine is dropped.

In the same journal Eden comments on the reports presented to the British Congress on Obstetrics and Gynecology in June, 1922, and thus summarizes his views:

It is easier to prevent eclampsia than to cure it. Prophylaxis is therefore all important. The reports show that in over 84 per cent of cases of eclampsia premonitory symptoms are present, the commonest of which are albuminuria and edema. In

addition to albuminuria there will generally be found headache, disturbances of sight, and epigastric pain, sometimes accompanied by vomiting; more rarely there may be muscular twitchings or attacks of petit mal. Careful supervision of the patient during pregnancy by her private doctor or at the ante-natal clinic would undoubtedly afford an opportunity for a large proportion of cases of threatened eclampsia being treated by preventive measures before the onset of fits. It is not certain that all patients with premonitory symptoms will necessarily develop fits, but what the author desires to point out is that treatment at this stage may snatch women from the very threshold of this formidable disease. He cannot give any figures upon this point, but it is the universal experience that women treated in the premonitory stage very rarely develop fits, and even if they do so, the disease assumes a mild form. It is reasonable to suppose, therefore, that prophylactic treatment would appreciably reduce both the frequency and the severity of the disease.

Prophylactic treatment consists essentially in: Bed; fluid diet only, and mostly water; purgatives; diuretics. Progress must be closely watched, the salient points to observe being amount of urine, amount of albumin, and blood-pressure. If progress is not satisfactory, or if relapses occur after temporary improvement, labor should be at once induced without regard to the period of pregnancy, or the possibility of survival of the child. He does not think it right to allow a woman who has once been on the verge of eclampsia to carry through to term, and therefore all cases which have developed the symptom-complex just described should be induced, although it is preferable, if possible, to defer the induction until the symptoms have disappared under treatment.

A case of eclampsia is not a case for domiciliary treatment; prompt removal to hospital is the first indication after a fit has occurred. It should be recognized that eclampsia calls for hospital resources as urgently as the most serious surgical operation.

A simple classification of cases into "mild" and "severe" would facilitate treatment and make clinical records of much greater value. The reports show that the proportion of severe cases varies in different districts; the influence of such variations upon the mortality-rate is undoubted, and any comparison of mortality-rates from different centers is of little value unless this classification is adopted. Definite lines of treatment can properly be tested, and compared with one another, only if applied in cases of approximately the same degree.

All cases of eclampsia, whether mild or severe, are best treated with the minimum of obstetric interference.

The Unpleasant Results of Well-performed Tonsillectomies.

RICHARDSON (*Annals of Otology, Rhinology and Laryngology*, Vol. XXXI, No. 3) observes that the tendency of nature to replace tissues removed through accident or design, to restore function through complementary or compensatory action, are well recognized facts to all surgeons, and that this action is observable in connection with lymphatic tissue, especially when removed in early life.

It has seldom been the lot of any operator, however skilful he may be in his operative dexterity, to find all of his cases, one, two or three years thereafter, to have absolutely clear tonsillar fossæ, free entirely of evidences of lymphatic tissue. Even though the operative field may be clear, there is occasionally a case in which there is an overgrowth of lymphatic tissue in close contiguity to the operative field.

As to the unpleasant local end results in well-performed tonsillectomies, the first group will include those efforts of nature to replace lymphatic tissue removed from the tonsillar fossæ by hypertrophy of glandular tissue in the immediate neighborhood.

(A) Hypertrophy of glandular tissue in the lateral pharyngeal wall, posterior to the palatopharyngeal fold.

(B) Hypertrophy of the lateral borders of the lingual tonsils.

(C) Development or hypertrophy of glandular tissue in the palatopharyngeal fold.

In the first of the three groups Richardson does not refer to simple showing of moderate hypertrophy of the follicle usually found in this area, but refers to those distinct tumor-like growths of lymphatic tissue which in their size and conformity resemble miniature tonsils.

He has seen a number of such cases. In the second group he reports a number of cases, some attended by distinct and annoying symptoms. He has seen three cases of deposition of lymphatic tissue in the posterior pillar of perfectly performed tonsillectomies that had all the normal appearances of tonsillar tissue.

In the healing process of enucleated tonsils, especially when the fossæ are very deep, there is a tendency to fill in the deep cavity by the development of granulation tissue. In most cases this granulating tissue is gradually absorbed in the natural process of repair, and we have a smooth, clean fossa. At other times this tissue undergoes organization, with the appearance here and there throughout its structure of lymphatic nodes.

Allied to the above mentioned group is the redevelopment of islands of tonsillar tissue to large masses of lymphatic tissue in the tonsillar fossæ. These small areas develop some period after the operation. It matters not how well the operation is done. All operators see these sequelæ.

Adhesion or shortening of the anterior pillar by its adherence to the dorsum of the tongue, and the adhesion of the lower lateral wall of the fossæ to the side of the tongue, form another group. This group of accidents gives rise to very uncomfortable symptoms, if we are to accept the statements of patients. Extreme care is the watchword to prevent this accident. Occasionally it will occur in spite of our best endeavors.

Injuries of branches or the trunk of the hypoglossal nerve give rise to annoying symptoms.

The Mechanics of a New Plaster Shell in the Treatment of Pott's Disease in Children.

SCHWARTZ (*Journal of Bone and Joint Surgery*, Vol. IV, No. 4), after laying down the general principles on which Pott's disease is based and crediting the *x*-ray pictures for the enormous help they have given, illustrates and describes his shell, which he now constructs in the following manner:

It consists of a posterior shell and an anterior lid, both of which are made of plaster, the ordinary five-inch bandages being used. The posterior shell is made by putting a stockinet shirt upon the patient, from head to knees inclusive. A hammock is swung from a frame and the patient is placed face down with the arms at right angles to the body, and the apex is marked with an indelible pencil. The head, spine, and legs are held in the same straight line and the first plaster bandage is applied in continuous turns from knees to the axillæ. The plaster is then continued over the shoulders, neck, and head by half-turns, which should extend well out over each shoulder and include each side of the head. Successive half-turns should then be applied to the back and thighs, extending to the midaxillary line on each side, and the last plaster should make continuous turns as did the first. The posterior shell should not be more than one-half inch in thickness, and the neck should receive special attention, since it is most likely to be the weakest point. The shell is removed by making a longitudinal cut on the ventral surface and spreading the sides well apart. Immediately after removal the edges of the shell should be trimmed and a circular opening of ample size cut out for the use of the bedpan. The transverse cut, which

forms the fulcrum, should not divide the shell completely until two long hinges made of soft strap-iron have been applied to the back of the shell. Two uprights about four inches in height are bolted to the lower half of the shell, which is then mounted on a long wooden base. With the distal segment of the shell thus firmly anchored, the proximal segment may be raised or lowered on the hinges which connect it to the lower half. In order to control the angle at which these segments shall rest, two turnbuckles are unscrewed to their greatest length and then bolted to each side of the neck of the shell. With the head of the shell at its highest point, the free end of each turnbuckle is fastened to the base. This done, the head may be lowered and held at any desired angle by shortening the turnbuckles. The shell is lined with gray felt and an extra thickness is placed along each side of the spine in the region of the kyphos. These are all held in place by wire thread and attached to only one segment of the shell, which is then entirely covered by stockinet, and oiled silk is sewed around the hole made to facilitate nursing care.

After completing the posterior shell and determining its efficiency by lateral *x*-ray negatives, the anterior lid should be made. With the patient in the posterior shell, a sheet of cotton is placed anteriorly and the lid is made to extend from the mouth to the knees by applying successive layers of plaster bandage in this direction. When dry, the lid is padded with a few layers of cotton and covered with stockinet.

The purpose of this anterior lid is to prevent motion of the spine while the patient is being turned. It is applied and strapped firmly to the patient on the posterior shell, and after he is turned the straps are loosened and the posterior shell is removed, leaving the patient to rest on the rigid anterior shell.

The time and skill required for construction of this shell, together with the *x*-ray evidence already set forth, suggested the need of a new apparatus, identical in principle, but essentially different in design, so that it would be more efficient and its application would not be limited to those localities where skilled mechanics are available.

A new shell which has been in use at the Children's Hospital, Boston, since June, 1921, was therefore designed by the author. It is decidedly less expensive, much more simple in construction, and up to the present time has proven to be mechanically efficient, although its true value is still to be determined. Careful *x*-ray studies of the limited number of cases now available have revealed four important facts which are in keeping with the mechanical and physiological principles essential to the rational treatment of this disease.

There has been no tendency toward separation of the diseased vertebræ.

Deformity, when present, has been materially diminished by the formation of compensatory curves in the normal spine.

The adjustable fulcrum should always be as wide as the diseased area, and it is most efficient when placed opposite the apex of the kyphos.

Thus constructed and placed, the fulcrum causes the force of gravity to be spent first upon the normal spine above and below the lesion, while the initial deformity remains unchanged.

The Delbet Walking Plaster for Treatment of Delayed Union in Fractures of Both Bones of the Leg.

ABBOTT (*Archives of Surgery*, Vol. V, No. 3) considers in his present paper those cases in which there is movement between the fragments, tenderness at the site of fracture; and that they are open medullary cavities is shown by the roentgenograms. This represents a period a little before the formation of a false joint. As a rule these cases are treated by open operation and direct fixation, often with unsatisfactory results. The atrophy of long rest and the effect of this upon joints is unfortunate and may be lasting. Moreover, in spite of such fixation and careful attention the bones may fail to unite. He states that a quite differ-

ent picture may be produced by treatment which makes provision for the mechanical stimulation of the fragments.

Experience in the treatment of these cases has shown that this stimulus may be best supplied by active use of the limb in weight-bearing, which not only improves the impaired circulation but stimulates the osteoblasts, with resulting production of callus. To allow such use of the limb in weight-bearing, some apparatus is necessary which will prevent further displacement of the fragments and at the same time permit free circulation in the limb and active use of the muscles and joints. The Delbet ambulatory splint has proved a simple and efficient appliance in meeting these requirements.

The apparatus consists of lateral, molded plaster-of-Paris splints reaching from knee to the junction of the skin of the sole with that of the upper part of the foot. Two molded plaster bands are passed about the lateral splints, one just below the knee, the other just above the malleoli. These bands bear, and cause the lateral splints to bear, against the malleoli below, thus preserving the length of the leg.

The apparatus is applied directly to the shaved and greased skin. The two lateral molds are applied to the leg and held by assistants while the operator anchors them with the circular cuffs, one about the tuberosity of the tibia and the upper end of the fibula, the other just above the malleoli. The plaster is then carefully molded to the leg, especially about the tuberosity of the tibia and the malleoli. It is very essential that the plaster be smooth in order to prevent irritation of the skin and the formation of pressure sores. A snug bandage is applied until the plaster has set.

At first the patient is allowed to walk using crutches, permitting only partial weight-bearing. As soon as he has become accustomed to the apparatus, the crutches are discarded and a cane substituted. In from a few days to a week, the patient is walking with no other support than that provided by the splint. It is essential that the patient be under close observation for at least the first few weeks of treatment to guard against undue pressure on the malleoli or tuberosities. It is a good practice to change the splint once a month in order to care for the skin and to determine the position of the fragments and the amount of union. Roentgenograms are taken once in six weeks to observe the callus production.

He reports cases with *x*-ray of excellent results, among them failure to unite even after careful internal splinting with metal plates.

Carcinoma of the Rectum.

VANDER VEER and DICKINSON (*American Journal of Surgery,* December, 1922) note that according to vital statistics there is a steady increase in the prevalence of carcinoma throughout the civilized world. In 1840 the proportion of deaths from cancer to those from all other causes was 1 to 129. By 1900 this ratio had increased to 1 to 23. At present, according to the latest United States census reports, cancer causes about one-tenth of all the deaths reported. In the two years that the United States was recently at war, eighty thousand of our soldiers and marines overseas died either from injury or disease. During the same period one hundred and eighty thousand people died from cancer in the United States. In 1920 about one hundred thousand deaths occurred from cancer in the United States.

Of all the cases of cancer about 6 per cent occur in the rectum and sigmoid. The growth may be a squamous, adeno-, medullary or scirrhous carcinoma, depending upon the location in the rectum and sigmoid. About 10 per cent of the growths may be classed as anal; 18.5 per cent as above the anus but below the peritoneum; 56 per cent above the line of the peritoneum; and the remainder are in the sigmoid. These figures are highly important from an operative standpoint, as one will observe that in over one-half of the

cases the growth is situated above the peritoneum. Age is frequently considered a predisposing factor in the cause of cancer. The maximum incidence of cancer is found between forty and forty-five, but it may occur at any age. Males are affected more frequently than females with cancer of the rectum, in the ratio of 3 to 1.

Hemorrhoids, colitis and constipation frequently precede the discovery of cancer of the rectum, but in the light of our present knowledge they have little to do with its etiology. Traumatism may be considered a factor.

The symptoms of cancer of the rectum and sigmoid vary from indefinite digestive disturbances to obstructive manifestations, depending upon the nature of the growth, its location, size, and extent. In the beginning, perhaps slight indigestion with constipation or even diarrhea, coupled with vague discomfort, or slight painful sensations referred to the region of the sacrum, are all that are present. Later there develops the "morning diarrhea." In this the patient is troubled during the day with frequent desire to defecate, while during the night he is comfortable and does not have to arise. Later, and when the disease is developing seriously, immediately upon arising in the morning he has a forceful dejection, consisting of blood, mucus, and pus, and perhaps a small quantity of fecal material. A little later in the day the patient has a good bowel movement, but the rest of the day he is annoyed by frequent attempts to defecate.

This brings up the question of blood in the stools. At first there may be simply a few drops now and then, while later black coagulated blood and bright-red fresh blood are passed in considerable quantities. Pain is a variable symptom. Its presence is usually indicative of a moderately extensive growth, and so its value as a diagnostic symptom is slight. Constipation is not always the rule with cancer of the rectum and sigmoid, but may be replaced by diarrhea, or at least attacks of the two alternating. In the earlier symptoms the diarrhea attracts our attention first.

The general physical examination should be thorough to determine the presence or absence of metastases. These may occur in the groin, abdomen, liver, lymphatic glands, and other abdominal organs. A careful digital examination of the rectum should be made, bearing in mind that a negative examination may be due to the fact that the growth is situated beyond the reach of the finger.

We often avoid this pitfall by using a proctoscope or sigmoidoscope, inflating the rectum so that we can visualize fully the entire surface of the rectum or sigmoid. By this method it is possible to diagnose lesions that would otherwise escape our attention. However, do not be misled by the overenthusiastic pathologist who requests a biopsy, as this is a most dangerous procedure.

Lastly, as a diagnostic method comes the *x*-ray with the use of a gastrointestinal series, and more especially the barium enema. In passing, it might be worthy of note that often, in growths of the rectum and sigmoid, great difficulty is encountered in injecting the barium or in having the patient retain it after injection.

With colostomy the patient may be at ease for even years. It is surprising how these people learn to care for their bowels by keeping them somewhat constipated and relieving them daily with soap-suds injection into the colostomy opening.

Far advanced cases, where any radical operation is contraindicated, live six to eighteen months after colostomy, and can be kept comfortable with or without radium treatments.

In the moderately advanced cases, in which there is no evidence of metastases, the prognosis is fair if a wide removal of the mass is done. There is usually absolute relief from pain. The expectancy of life is certainly beyond three years, many patients dying of some other malady.

In the early cases the prognosis is good.

Their expectancy of life is about ten years, and many have patients alive and well to-day who have survived more than ten years. In connection with any estimate of expectancy of life, it is only fair to refer back to the tables which show that cancers of the rectum are more commonly found between forty and forty-five, at which period of life the death-rate in normal individuals is at a fairly high level. An early diagnosis aids any form of operation. Great and valuable information is gained by a thorough study of the appearance of the stools without waiting for the presence of blood before making our diagnosis.

Reviews

LEGAL MEDICINE AND TOXICOLOGY. By Many Specialists. Edited by Frederick Peterson, M.D., LL.D., Walter S. Haines, A.M., M.D., and Ralph W. Webster, M.D., Ph.D. Volumes I and II, copiously illustrated. W. B. Saunders Company, Philadelphia, 1923. Price $20.

The earlier edition of this well-known book, which first appeared in 1903, or twenty years ago, at once took its place in medicolegal literature as a reliable work of reference. It is not possible in the space which we can use to take notice of all the articles or to name all the authors. It is interesting to note, however, that some of the articles have been revised by men who are universally recognized as authorities in their departments, as, for example, Belfield, DaCosta, E. P. Davis, Dorland, Hammond, Holland, Hunt, Allen J. Smith, and Victor C. Vaughan. Other articles have been entirely rewritten by new contributors, notably Ludvig Hektoen, Le Count, Moyer, Webster, and Goldwater. Several new subjects have been introduced, as, for example, The Forensic Relations of Cremation, and The Possible Legal Obligations following the Application of Radium and Ultra-violet Rays.

In the section dealing with Toxicology, a considerable number of additional poisons have been discussed. Other new articles deal with the common law and statutory obligations of pharmacists, with the identification of the living by Bertillon methods, poisonous mushrooms, industrial poisoning, and protein poisoning.

The book is adequately provided with foot-note references to the important literature dealing with its subject, and its illustrations are well chosen to accompany and explain the text. Alienists will be particularly interested in the summarization of the State laws relating to the insane, beginning with Alabama and passing through all the States to Wyoming.

Printed on excellent paper in good size type, the publishers are to be congratulated upon their work, and the Editors and contributors may be said to have made a very notable and very up-to-date contribution to medical literature.

NON-SURGICAL DRAINAGE OF THE GALL TRACT. By B. B. Vincent Lyon, A.B., M.D. Illustrated. Lea & Febiger, Philadelphia, 1923. Price $10.

The author of this book is well known to the medical profession because of his application of magnesium sulphate through the duodenal tube for the purpose of studying the expulsion of, and the character of, the bile in health and in disease.

Dr. Thomas McCrae, Professor of Medicine in the Jefferson Medical College, in an introduction to the volume compares this method with the introduction of the ophthalmoscope, the cystoscope, the stomach tube, graphic records of the heart, and the sphygmomanometer. As he well points out, the technique of biliary drainage as required for accurate diagnosis is not simple and requires time and patience,

which some are unwilling to give, and, therefore, are not justified in expressing an opinion as to the value of the method. Dr. McCrae does not see how any one can study this method, when properly carried out, and not appreciate its value, and he points out that the author has been conservative in that he has not suggested that it should supersede all other methods of investigation and therapy in hepatic, gall-bladder, and bile-duct disease. On the other hand, McCrae says that he knows no other method by which such certain results could be obtained.

In the preparation of his text the author has not only used a very large number of illustrations and ten colored plates, but he also has endeavored to illustrate the type of cases which he is studying by giving definite case histories, thereby employing a method which at the present time seems to be fairly popular and which certainly has the advantage of giving the reader a clinical picture of the methods followed and the results obtained.

A chapter in the section on Diagnosis has been contributed by Olaf Bergeim, of the Department of Physiological Chemistry of the Jefferson Medical College, in which he deals with the "Quantitative Determination of Enzyme Activity in Duodenal Fluids."

An interesting chapter is that by Dr. Willis F. Manges, of the Jefferson Medical College Hospital, upon the "Roentgen Ray Diagnosis of Gall-bladder Disease," a field in which it is well recognized that much difficulty exists.

When we recall the fact that Dr. Lyon is a pioneer in this work, first applying Meltzer's views to practical medicine, we at once recognize that any one who wishes to make himself familiar with the subject should base his knowledge upon the text contained in this volume. It is essentially a statement of his personal views controlled by familiarity with the work of other men, to which work references will be found in many foot-notes. To such an extent does the author recognize his obligation to other workers that he devotes three pages to an index of the authors whom he has quoted.

To put the matter succinctly, this book contains the fundamental facts and the personal views of the author concerning this matter so well illustrated by pictures and described in words that little doubt can remain in the reader's mind as to his views or the plan which he believes should be provided in studying cases which lend themselves to this method.

HELIOTHERAPY. By A. Rollier, M.D., with the collaboration of A. Rosselet, D.Sc., M.D., H. J. Schmid, M.D., and E. Amstad, M.D. The Oxford University Press, London and New York, 1923. Price $8.

This is a small volume of less than 300 pages including the index, manifestly designed from its title to indicate what can be done by heliotherapy in the treatment of disease, and naturally dealing chiefly with those forms of tuberculosis which yield to this method of treatment.

The author is the Medical Director of the Institution for Heliotherapy in Leysin, and his collaborators occupy the positions of lecturer, radiologist, and surgeon.

It is pointed out in the preface that the term surgical tuberculosis is a misnomer in so far as it involves any suggestion of operative measures as the rational or even legitimate treatment. Emphasis is laid upon the fact that tuberculosis, wherever situated, is a general disease, presenting local manifestations and demanding treatment directed toward the improvement of the general health, with such additional local treatment as is necessary. Twenty years ago the author opened at Leysin the first clinic for the systematic application of the sun treatment. The altitude is 5000 feet, the air is never oppressively hot even in the height of summer, and in winter, although the atmosphere is intensely cold, the brilliance of the sun more than counteracts this influence.

The author, of course, is enthusiastic in his belief as to what heliotherapy can do for bone and joint tuberculosis and places in his text many interesting illustrations of patients who have been wonderfully im-

proved by the methods which he has instituted; also giving case histories and the results of radiological examinations indicating that the improvement has been actual.

There can be no doubt that physicians heretofore have paid far too little attention to this method of treating tuberculous lesions of the bones and joints. Any physician who has cases of this kind under his care will do well to peruse this volume.

Although certain methods of orthopedic surgery are directed to be used in conjunction with the light treatment, nevertheless if the patient is unable to go to Leysin his own physician by a little care can give him the benefit of sunlight at home.

DISEASES OF THE NERVOUS SYSTEM. A Textbook of Neurology and Psychiatry. By Smith E. Jelliffe, M.D., Ph.D., and William A. White, M.D. Fourth edition, revised, rewritten, and enlarged; copiously illustrated. Lea & Febiger, Philadelphia, 1923. Price $9.50.

That the fourth edition of a book dealing with this subject should have been called for within a space of eight years indicates that the authors have not only produced a work which is creditable, but have also provided a text which the practicing neurologist and general practitioner have found of value. Dr. Jelliffe is gifted with a ready pen, and Dr. White has had a large experience as superintendent of St. Elizabeth's Hospital, Washington, an institution devoted to the care of mental troubles. The book naturally follows the course of many of its predecessors; beginning however with the methods of examination of the nervous system and then passing on to vegetative or viscero-neurology and the disorders of the endocrine glands. After this it deals with disorders of sensation and motion, taking up the pathological conditions manifested by abnormalities in different portions of the central and peripheral nervous system.

Occasionally the fertile pen of the first author gives us sentences which, to say the least, attract attention, as, for example, the statement that "the human being is to be regarded as an open heterogenous energy system by which energy is captured, transformed, and delivered," with the further statement in the next paragraph that "the energy comes from the cosmos."

We think it is fair to state that the introduction gives rather a fictitious idea of the value of the rest of the text, much of which is definitely clinical, and, therefore, of use to the active practitioner. The illustrations are well chosen, exceedingly numerous, and the book is admirably printed with excellent type, and so is easy to read.

THE MEDICAL CLINICS OF NORTH AMERICA FOR MARCH, 1923. W. B. Saunders Company, Philadelphia, 1923.

This issue of the Medical Clinics of North America is called the "Ann Arbor Number" because it is contributed to by members of the teaching staff at the University of Michigan. As with most previous numbers the articles cover a very wide range of topics, which, of course, are distinctly clinical. Opening with a clinic by Dr. Warfield upon Hodgkin's Disease in the Mediastinal Glands and Lymphosarcoma, we find another paper by Newburgh upon The Use of a High Fat Diet in the Treatment of Diabetes Mellitus; one entitled "Those Painful Women," by Dr. Hugh Cabot; and others by various contributors covering almost every field in Medicine in distinction from Surgery, such as gastric tetany, the medical treatment of peptic ulcer with gastric retention, and chronic pancreatitis. Those who are familiar with this publication will remember that it is printed in large type, heavily leaded, and is therefore easily read.

WAR BLINDNESS AT ST. DUNSTAN'S. By Sir Arnold Lawson, K.B.E., M.D., F.R.C.S. Oxford University Press, London and New York, 1923. Price $2.50.

Sir Arnold is Senior Ophthalmic Surgeon and Lecturer on Ophthalmic Surgery at the Middlesex Hospital, London. He well points out that shortly before his death, Sir Arthur Pearson published in his Victory Over Blindness a very complete and detailed history of St. Dunstan's, but little has been published in regard to the nature and character of the blindness on account of which this institution came into exist-

ence. The present text is a result of a promise made to Sir Arthur three years ago that the author would cover those parts of the subject which he did not discuss.

The book is divided into three parts: the first dealing with traumatic blindness, as, for example, through-and-through bullet wounds of the orbits, or fractures of the skull causing blindness, and then follows a discussion of non-traumatic blindness due to inflammatory disease, to optic nerve degeneration, to detachment of the retina, and to other pathological conditions arising in the eyeball, with further discussion of glaucoma, cataract, hemorrhages in the eyeball, and retinitis in its various forms, also giving consideration to pituitary tumors and trachoma; the last part deals with disability pensions for the blinded soldier and reëducation of the blinded soldier.

The book is made up quite largely of records of cases and from every standpoint is distinctly clinical in its nature. It gives a fairly good idea too of what the English have been doing in taking care of those men who fought for their country during the Great War and who suffered from ocular injury.

A Key to the Electrocardiogram. By Louis F. Bishop, M.A., M.D., Sc.D. Illustrated. William Wood & Company, New York, 1923. Price $3.

For a number of years Dr. Bishop has been busily engaged in preparing papers and giving addresses upon the subject of heart disease. His object in preparing the text found in this large page volume of less than one hundred pages has been to present his professional colleagues with information which would encourage them to use the electrocardiograph, and to study electrocardiograms carefully in order to be familiar with their variations in health and disease. As a matter of fact most busy practitioners find that the best method to pursue is to refer a patient who needs an electrocardiographic study to one who makes a specialty in the use of this instrument and in the study of its tracings, and to rely largely upon his interpretations of the results, since unless one works constantly with such material he is liable to reach erroneous conclusions.

Printed in large type and well illustrated, this little volume contains much that will prove illuminating to the general medical reader who wishes to brush up on this important topic.

Social Work in Hospitals. A Contribution to Progressive Medicine. By Ida M. Cannon, R.N. New and revised edition. The Russell Sage Foundation, New York, 1923.

This book was first copyrighted in 1913 by the Russell Sage Foundation, the author basing what she had to say upon the fact that in 1912 she had the opportunity of visiting most of the hospital social service departments in this country. Since then there has been a great increase in the number of such departments attached to general hospitals, and for this reason the author has deemed it wise to make such changes and amplifications in her text as to bring it up to date. The book is so well described in its title that little need be said in regard to the scope of the text itself.

She divides her subject into twelve sections, beginning with the history of social service, and then dealing with the medical social problems which arise in connection with such diseases as tuberculosis, syphilis and gonorrhoea, with illegitimate pregnancies, chronic diseases, mental diseases and defectives, with further chapters upon the basis of treatment, proper sort of records, plan of organization, and the future of this work. Those who are actively engaged in hospital management, and many others, will find much of interest in this little volume.

Duff House Papers. Edited by Edmund I. Spriggs, M.D., F.R.C.P. Volume I, copiously illustrated. Oxford University Press, London and New York, 1923. Price $9.50.

Duff House in Banff is an institution in which various types of disease are studied, chiefly of subacute or chronic nature. The present volume contains a manual for the use of diabetic patients, a detailed account of the *x*-ray technique employed at Duff House in the examination of the alimentary canal, and a collection of papers already

published, and having their origin in this institution since 1913, which the editor thinks worthy of being placed in type a second time, such articles being taken chiefly from the *Quarterly Journal of Medicine*, the *Lancet*, the *British Medical Journal*, the *Proceedings of the Royal Scoiety of Medicine*, and the *British Journal of Surgery*. Thirteen members of the staff contribute the papers.

American physicians will probably get a clear idea of the intent and scope of this volume if we tell them that it is along the lines of the contributions of the Mayo Clinic or the Medical and Surgical Clinics of Philadelphia, Chicago, New York, and Boston, which are published from time to time by the Saunders Company.

As with all of the publications arising from the Oxford Press, this one is printed upon very heavy paper with an extra large page and may be considered an "edition de luxe."

THE COLLOIDAL STATE. In its Medical and Physiological Aspects. By Sir William Bayliss, F.R.S., M.A., D.Sc., LL.D. The Oxford University Press, London and New York, 1923. Price $2.15.

As may be imagined from its title, this small monograph of less than 100 pages is an attempt to give a short account of the properties of colloids so far as they are of interest in connection with the phenomena occurring in human beings. The author points out that in many cases the purely chemical properties of substances in the colloidal state are similar to those of the same substances in true solution, and that although the characteristics of the colloidal state are mainly physical or physico-chemical, the chemical aspects of the problems are not overlooked.

The text deals with the nature of the colloidal state, with surface tension, absorption, and electrical charge, osmotic pressure, viscosity, imbibition, physiological action, and finally with proteins and hemoglobin. The author thinks that before long we shall not be content with the statement that such and such a phenomenon is chemical, but demand an explanation in terms of the physics of the atom.

DISEASES OF THE GUMS AND ORAL MUCOUS MEMBRANES. By Sir Kenneth Goadby, M.D., M.R.C.S. The Oxford University Press, London and New York, 1923. Price $14.

We are told in the preface that this work is intended to supply the general medical practitioner and dental student with a textbook on diseases of the gums and oral mucous membranes and that much of the subject-matter is derived from the author's personal observations during the last twenty years, although he gives credit to many other persons who have been interested in this theme. The text and index cover 383 pages and the book is handsomely printed, as are all the publications that come from the Oxford Press. It contains 106 illustrations and is divided into 10 chapters, which naturally deal at first with the anatomy and physiology of the gums, then with their pathology, and then with disease originating from mouth infection, with a consideration of special diseases of the mouth and gums; there is a chapter upon neuralgia and mouth neuroses, and another, which concludes the volume, upon the principles and methods of diagnosis in oral diseases. Amongst eight colored plates we find one of Vincent's angina, another of sprue, a third of Koplik's spots, and a fourth showing the blue line of the gums in chronic lead poisoning.

MERCK'S MANUAL OF THE MATERIA MEDICA. Merck & Company, New York, 1923. Pliable binding, 50 cents.

In this fifth edition of Merck's Manual, the entire text has been carefully revised and much new matter has been added, the endeavor being made, however, to keep the volume so small that it can be carried in the side pocket of the sack coat. Innumerable prescriptions are printed to indicate how the various products may be used. The text does not deal alone with drugs and chemicals manufactured by Merck, but with many other substances which may be produced by any chemist or manufacturer. Thus, we notice that adrenalin is suggested for asthma and that pituitrin receives indorsement in the conditions in which it is generally recognized as being useful. Occasionally scattered through the text there

is found a summarization of the symptoms presented by patients who need certain drugs, as, for example, under the heading of Heart Disease. We cannot agree with the statement on page 278 that "dyspnea, a congested appearance, and a tendency to bronchitis are symptoms found even when compensation is present." This criticism is offered, however, not in the way of condemnation, but as indicative of the interest which we have taken in looking through these well gotten together pages of information.

THE SURGICAL CLINICS OF NORTH AMERICA. February, 1923. Volume 3, No. 1. Philadelphia Number. W. B. Saunders Company, Philadelphia and London, 1923.

This volume contains the report of clinics by Deaver, Frazier, Ashhurst, T. Turner Thomas, Miller, Eliason, Davis, Skillern, Lipshutz, Ravdin and Grant, and covers, as might be expected, a large range of subjects. Jopson reports successful results from the excision of large carbuncles with the electrocautery knife, followed by the Carrel-Dakin treatment of the wound.

T. Turner Thomas pictures a successful result from operation on a posterior dislocation of the shoulder-joint, with obstetric palsy. He also records an obstruction of the common bile duct by an enlarged lymph gland.

Ashhurst's chapter is devoted to the exhibition of cases illustrating the surgery of the stomach.

Frazier has considered some of the surgical problems in the management of pituitary disorders, and calls attention to the fact that there are on record a number of cases of radiation, after which visual and other disturbances have subsided.

Deaver contributes a brief paper upon intestinal obstruction. Eliason writes on supracondylar fracture of the humerus, illuminating his text by many *x*-ray pictures. He has also an excellent paper on esophageal diverticulum of the cervical region.

This brochure is a helpful addition to the surgeon's library.

DISEASES OF THE RECTUM, ANUS AND COLON. By Samuel Goodwin Gant, M.D., LL.D. Three octavo volumes. Illustrated. W. B. Saunders Company, Philadelphia and London. Price $25.00 net.

Saunders has published this work in three volumes, with his usual excellence of print, fine quality of paper, and abundance of illuminating illustrations. Gant is well known to the profession from his previous writings on the intestinal tract, and these volumes will be received as coming from one who combines the attributes of the student with a large professional experience. The first volume is prefaced by Embryology of the Stomach, Small Intestine, Colon and Rectum; this is followed by chapters on Anatomy, Symptomatology, Methods of Examination and Anesthesia. Thereafter come sections on Malformations, Wounds and Injuries, Papillitis, Cryptitis, Fissure, Proctitis, Abscess, Fistula, Fecal Incontinence, and Hemorrhoids.

The second volume is devoted to Hemorrhage, Procidentia, Ano-rectal Ulceration, Pruritus and other Skin Affections, Tuberculosis, Venereal Disease, Sodomy and Pederasty, Ano-rectal Stricture and Growths and Diverticula, the Anatomy and Physiology of the Small and Large Intestines, Wounds and Injuries of the Abdomen, Catarrhal Enterocolitis.

The third volume deals with Bacillary and Protozoal Colitis, Parasitic Diseases, Tuberculosis of the Intestines, Venereal Infections, Toxic Disturbances, Focal Infections, Hemorrhage, Diverticula, Obstipation, Growths, Cecostomy, Enterostomy, Artificial Anus, Colonic Sigmoidal and Anal Diseases of Infancy and Childhood.

It will be seen from the headings of some, but not all, of the chapters that a larger field is covered by these three volumes than would be predicated from the title of the book. It is covered succinctly, rationally and with a proper appreciation of modern appliances, of diagnostic methods, and of approved technique.

The author seems to place a higher value on visceral suspension operations and on Lane's short-circuiting than does the profession at large.

Notes and Queries

Science and Alcohol.

In an editorial on this subject the *Ohio State Medical Journal* for May, 1923, states that Samuel Hopkins Adams in an article entitled "Science Has its Say About Alcohol," published in *Collier's,* April 4, 1923, has some rather pertinent remarks about the use of alcohol. So important is this message that editorially *Collier's* points out that the way to smash an evil is to get at the truth about it. For years devoted men and women have warred against alcohol as the destroyer of our bodies, whereas it is a social evil, as the destroyer of souls, that drink is most to be feared. The facts Mr. Adams presents are startling. They should help us to think straight about the thing which hits closest at our lives.

Dr. Raymond Pearl, Adams says, whose biological and statistical findings seem likely to modify radically the prevailing conception of alcohol as a physiological agent, is recognized as one of the leading biological statisticians of the world. When a representative of the newly established Johns Hopkins School of Hygiene and Public Health went to England to consult distinguished scientists there as to finding a man for the department of biometry and vital statistics, he was met with the counter: "Why come to Europe for a biometrist, when you have Pearl in America?"

Accordingly Pearl was appointed to the chair which he now holds. He is interested not primarily in alcohol but in vital statistics; in fact, at the outset of his investigations he hit upon alcohol as he might have hit upon arsenic or atropine as a convenient toxic agent for some experiments in heredity, and with no intention originally of carrying his quest into the department of human life. He is not concerned with controversy or opinion, except as it may affect evidence; he is concerned with ascertainable, demonstrable facts and reckonable probabilities. He is not a propagandist, but a scientist.

Dr. Pearl's special task, which has led him so unexpectedly into the embattled and embittered field of which Mr. Volstead is the plumed knight, began remotely enough with certain experiments upon chickens, undertaken several years ago. Broadly stated, what he sought was to determine how far, if at all, the alcoholization of chickens would affect the brood hatched from the eggs of those chickens.

Until Pearl's conclusions are refuted or modified by investigations of an equally scientific and unbiased character, the following salient and revolutionary findings must be accepted by fair-minded students of the subject, no matter what their bearing upon the social aspects of the present war against booze:

That the use of alcohol as a beverage, except in immoderate quantities, does not tend to shorten human life.

That, lacking sufficient human data and in so far as biological experiments can determine, the offspring of a strongly alcoholized strain are distinctly and comprehensively superior to the same breed, unalcoholized.

That alcoholized subjects (chickens) are almost invariably hardier, more resistant to disease, and longer lived than non-alcoholized.

Further and more detailed inquiries in this general field will undoubtedly follow Pearl's, undertaken by himself or others and conceived in the same explicitly judicial spirit. Such matters as the effect of alcohol in the human genealogy upon the descendants of the drinker, and the influence of drink in moderate or immoderate quantities upon the death-rates of such important diseases as Bright's disease, diabetes, tuberculosis, pneumonia, and perhaps cancer, now call for detailed statistical determination.

Meantime the two major indications derived from Pearl's pioneer work, that alcohol appears to exercise a selective process of heredity to the benefit and not to the detriment of the strain—that is, that it is

an agent which improves the race by eliminating the physically unfit before birth, and the moderate use of intoxicants does not militate against the expectation of life —these stand as a challenge to the sweeping claims of antialcoholic propaganda; the most formidable because the most scientific yet advanced.

Suit to Annul Dry Laws Affecting the Practice of Medicine.

In an editorial on this topic, the *Journal-Lancet* for January, 1923, states that this is a delicate subject even to approach, first, because of the determined endeavor of the country to make itself dry, and, secondly, because so many physicians who have been granted permits to issue prescriptions for liquor have so thoroughly abused their privileges that one hardly knows how to act. Yet the American Medical Association attempted some time ago (at its meeting of the House of Delegates in St. Louis in June, 1922) to have the eighteenth amendment revised so that the prescribing of real liquor (good, pure brands) could be taken over by the government, and prescriptions issued by a physician who recognized his limitations in prescribing, and who would not, for profit, prescribe for fictitious names. The effort on the part of 105 doctors in New York to unite and carry to the United States Supreme Court a proposition which will put alcoholic prescriptions on a normal basis is under way, and the principal argument of those who are opposed to the present method of restricting physicians' practice is that Congress has attempted to dictate to the medical man what he shall and what he shall not use. For instance, there may be some people who, from illness, need an alcoholic stimulant; but Congress says the physician shall not be permitted to issue such a drug without a definite license. They may attempt, later, to restrict the sale of tincture of digitalis or aromatic spirit of ammonia on a similar basis—that is, Congress may attempt to practice medicine on its own hook without having been legally examined by an examining board and licensed by the same.

There are very few physicians who will question the advisability of the occasional use of alcohol in critical disease. For example, a woman is sent to Minneapolis from an adjoining State with suppression of urine, due to a pregnancy. Her doctor advises her to have her uterus cleared out. The surgeon to whom she is sent takes the matter under advisement, concludes that the condition may be relieved in some other manner, and attempts to do so and succeeds. At the eighth month, and by artificial assistance, the woman gives birth to twins. Within the following two weeks one of the twins dies. The woman contracts pneumonia, and upon the return of her medical adviser he finds her prepared for death. He recognizes a situation that is desperate and orders two ounces of whisky every two hours, and the desired result is produced. The woman passes through the crisis of her pneumonia and makes a complete recovery. Yet it is known that this surgeon is an absolutely temperate man. He would not think of taking a drink himself, nor would he prescribe it except that he recognized its value in certain cases.

Let us hope the Committee may succeed in their honest efforts to protect themselves from an ill-advised action of Congress, and also put alcohol where it belongs as a drug for administration to people who actually need a stimulant. This would insure the purity of the product and would do away with the illegal manufacture of so much that is poisonous and which appeals to the commercialized or self-appointed agent for the sale of illicit drugs.